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THE KING OF BEASTS

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The Book of Knowledge

The Children's Encyclopædia

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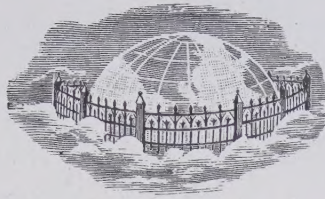
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The Book of NATURE



One of the prettiest varieties of the clematis, cultivated as a climber over walls and porches.

THE FLOWERS OF THE GARDEN

THERE is no such thing in wild Nature as a double rose. All the wild roses have only five petals, a great number of stamens, and several pistils. The gardener has so coaxed and petted the rose that he has induced it to turn nearly all its stamens into petals, and he has changed its color so often that now we may have roses of almost any tint, from yellow and white and pink to the darkest of purple crimsons. He has been trying for long years to grow a blue rose, but, so far, has always failed.

To-day there are the names of more than a thousand garden varieties of roses in the catalogues of the nursery-men. Owing to the fact mentioned, that the "doubling" of the rose has meant the loss of most, or all, of its stamens, these flowers, lovely as we may consider them, are, after all, imperfect flowers. The pistils are mostly there, but if they produce seeds it is, in most cases, through pollen brought by the bees from wild roses in the fields; so that the seeds grow into plants with flowers more or less like the field rose.

So when a flower appears that is better than others of that particular kind of rose, the gardener has to cut off the shoot that produced it, and

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to get it to take root. Then, when it has grown into a little bush, he cuts out a number of the shoot-buds from the stems, and fixes them under the skin of a wild rose, and when the wound has healed and the bud has grown into a shoot, he cuts off all the other shoots and buds of the wild rose, and allows only the new parts to grow. In this way he makes a number of specimens of his new rose out of the one little cutting he induced to root. Some of the shoots he may cause to grow on wild-rose stems—or "stocks," as he calls them—by grafting, in the way you may read in another place; and by this means all the garden roses have to be increased.

Perhaps the most popular of all garden flowers just now is the sweet pea. It grows wild in Sicily, and was first grown in our gardens a little more than two hundred years ago. There is no need to describe the flower, except to point out that its structure is the same as that of the narrow-leaved everlasting pea, and of the broad-leaved everlasting pea of the garden. These, however, are perennials, and bear their flowers in clusters, or racemes, while the sweet pea is an annual, and bears only two or three blossoms on each flower-stalk.

The carnation, in its wild state, is, of course, always single, and it is a native of the countries around the Mediterranean. It is believed to have been taken to England as far back as the middle of the thirteenth century. Owing to its strong, clove-like scent it used to be called the clove, or clove-pink. As a wild flower its color is always lilac; but by careful selection and crossing between the best of the varieties that appeared in gardens we now have all sorts of tints.

Garden pinks of all kinds are closely related to the carnation; so is the old-fashioned sweet-william, which has broader and greener leaves, and the brilliant Chinese pink, so frequently grown as a garden annual. The pink and the sweet-william came from Europe long, long ago, and the Chinese, or Indian pink was brought here from China just about two hundred years ago.

THE GERANIUMS, THE REAL NAME OF WHICH IS PELARGONIUM

Then there are the geraniums used for bedding in the summer months, but which are too tender to stand our winter climate out of doors. Their proper name is pelargoniums, but the gardener persists in calling them geraniums. We have a number of wild geraniums in this country, but no pelargoniums. The latter were introduced from South Africa about two hundred years ago, and have been so improved by crossing that they have little resemblance to the original South African plants. They may be ranked in three distinct classes—the show pelargoniums of our greenhouses, with large, richly colored flowers; the zonal, or bedding pelargoniums; and the ivy-leaved pelargoniums that look so well trailing over the sides of window-boxes.

THE SWEET STOCKS HAVE BEEN BROUGHT FROM EUROPE

Brompton and ten-week stocks are cultivated forms of plants that grow wild in the south of Europe, and they have grown in our gardens for a hundred and fifty years. They are annuals. The wallflower belongs to the same family—the cross-bearers—and is also a European plant; but it has been known in English gardens for over three hundred years. It will not survive a North American winter. Arabis, that produces masses of pure white flowers in early spring on rockeries and in border edgings, is another member of the same family. It was taken to

England from the Caucasus little more than a century ago.

MANY FLOWERS BELONG TO THE BUTTERCUP FAMILY

The buttercup family has given us many garden flowers, among them all the beautiful forms of clematis that climb over our walls and porches, covering them with white or purple flowers. One of the best of the white-flowered kinds is the mountain clematis from India. The big-flowered purple and blue kinds are cultivated forms of a Japanese species. There are no petals in any clematis, the showiness of the flower being due to the four sepals. The noble larkspurs also belong to this family.

Often in cottage gardens we shall find a larkspur with leaves divided into hair-like portions, and with a spike of blue, red, or white flowers. This is also a cornfield weed in the east of England. But in larger gardens we shall frequently see a larkspur that towers up to six feet or more, and ends in a long, thick column of brilliant blue flowers. Its parents grew wild in North America a hundred and fifty years ago.

The Christmas rose is another of the buttercup family, nearly related to the wild hellebores. It is no rose at all. Its bold, white flowers appear in winter, and so are greatly esteemed. All the brightly colored ranunculi are true buttercups with larger flowers than any of our wild yellow kinds; they came from Turkey and Persia, where they had been cultivated long before. The garden anemones, too, are relations.

There are poppy anemones also, and Japanese anemones, the latter tall-growing, with handsome leaves and large white or pink flowers. Poppy anemones are real old-fashioned garden flowers, for we have grown them for three hundred years; but the scarlet anemone and the Japanese anemone are quite modern introductions.

Columbines, monk's-hood, and peony all belong to the Buttercup family, although they are so unlike in general form. The columbines come near to the larkspurs. Up to the middle of last century the garden columbines were mostly forms of the European kind, but in later years, owing to the coming of the beautiful, long-spurred, yellow columbine from California in 1873, a good deal of crossing has taken place. The peony,

though a native of South Europe, was grown in English gardens at least three hundred and fifty years ago. These peonies were the large-flowered, dark crimson kind, and a smaller white-flowered one from Siberia; but towards the end of the eighteenth century the shrubby tree-peony was brought from China and Japan, and became popular on account of its more delicate tints.

THE VIOLETS AND PANSIES OF THE GARDEN

Garden violets are improved forms of the wild sweet violet, and the pansies and bedding violas have been produced from the little wild pansy, or heartsease. Many of the garden violets are double; but the florists do not appear to have tried to get double pansies—they seem to have tried to keep the flower as flat as possible.

THE FUCHSIA, A NATIVE OF SOUTH AMERICA

Except as a summer bedding plant, the fuchsia is only seen in gardens of the extreme south and west of our country. In California we shall find it is one of the common garden bushes, and it often becomes a small tree. It is a South American plant, that was unknown in this country until near the end of the eighteenth century.

THE SWEET OLD-FASHIONED POLYANTHUS AND THE AURICULAS

The polyanthus is to-day rather a forgotten and neglected flower, but we shall still find it treasured in old-fashioned gardens, and gardens of country cottages. It is believed to have had its origin in a crossing of pollen between the primrose and the cowslip, the result being the large flowers of the primrose on the tall flower-stalk of the cowslip, with a greater variety of richer tints than either of its original parents possessed. The auricula is another kind of primrose that was formerly a great favorite of gardeners. All the many varieties of rich coloring have been produced from the yellow-flowered auricula that grows wild in the Swiss Alps.

Among the wild flowers that have been taken into the garden without its being thought necessary to improve them is the graceful and dainty London pride.

THE SEDUMS, OR STONECROPS, FROM EUROPE

Several wild sedums, or stonecrops, of Europe have been admitted into the

garden; not only the yellow and white stonecrops, but also the taller crimson-flowered orpine. A beautiful sedum with bright crimson flowers is the trailing stonecrop from the Caucasus region.

THE THISTLES OF OUR GARDEN BEDS

We have even taken into the garden several thistles, among them the handsome, blue-flowered globe thistle, from the south of Europe, which has been with us for more than three hundred years. The cotton thistle, which is a tall, branching plant, with huge but handsome spiny leaves, covered with white, cotton-like hairs, is wild in some parts of the country. Another fine thistle is called the holy thistle, or milk thistle. Its large leaves are marked with white along the midrib.

GREENISH-WHITE FLOWERS OF SOLOMON'S SEAL

Solomon's seal is a real wild flower; but it is much more frequently seen in our woods than in the garden. It is one of the lily family, though its habit is so very different from most of the lilies. Its tall, arching stem, set with a row of leaves on each side, looks more like the frond of some palm. The greenish-white, narrow, bell-like flowers present a very singular appearance.

LILIES AND TULIPS FROM FAR-OFF LANDS

The lily family figures largely in our gardens, and of the lilies proper we have introduced several. There is, perhaps, none of them so fine as the hardy madonna lily, or white lily. It is wild in the south of Europe. There is also the tiger lily, with its dark-spotted, orange-red flowers, that came from China a hundred years ago, from which country and Japan we have received several other lilies.

The strongly scented Japanese lily, with the golden stripe down the middle of the large white petals, is, perhaps, the favorite, though it is not hardy, and can only be turned into the garden in summer, being usually planted in tubs and grown in the greenhouse, until the flower-buds have formed. This lily was unknown to us fifty years ago.

Very similar, except for the golden stripe, is the showy lily, a smaller but more hardy kind that came from Japan nearly eighty years ago. Then there is the giant lily, that has large, heart-shaped leaves, and a stem ten feet long, that ends

in a cluster of drooping white, trumpet-shaped flowers. The star of Bethlehem is another plant of the lily tribe, which, though a native of Europe, has become naturalized in damp places. It is one of the prettiest of our smaller bulbous plants, its numerous grass-like leaves spreading around a stem crowded with white, star-like flowers.

Among other lilies we must not forget the tulip, of which we have a great number of varieties of diverse forms and colors. Most of them have descended from three wild tulips found in South Europe, Siberia, and Asia Minor. The fragrant white day lily is from Japan, as well as its blue relatives. The sweet-flowered lily of the valley is a wild plant of the woods which is much more frequently seen in gardens than outside of them. The stately red-hot poker, which makes so fine a display in parks and gardens at the end of summer, is also a lily, coming from South Africa.

HYACINTHS FROM EUROPE AND THE ORIENT

The garden flowers that arise from bulbs, like these lilies, might well take up an article to themselves—they are so many. Many of them are known under the general head of Dutch bulbs. Among these are the wonderful trusses of sweetly perfumed hyacinth-bells that spring from the onion-like bulb in all sorts of charming tints. The original stock from which all these varieties have been produced is the oriental hyacinth, which is wild in Syria.

The grape hyacinth belongs to another section of the lily family, and grows wild in Europe and the Orient. Instead of the bell-shaped flowers of the hyacinth, these are globular, and, as they are dark blue in color, resemble little grapes; so the plant has been called grape hyacinth. The hyacinth, or bluebell of English woods, belongs to another branch of the family—the squills. The kind more generally seen in borders is the early-flowering, bright blue Siberian squill, often planted with a somewhat similar flower called the glory of the snow, which came to us from the island of Crete less than fifty years ago.

FLOWERS OF THE AMARYLLIS FAMILY

Another group of bulbous plants comes near to the lilies, but belongs to the amaryllis family. Well-known garden

examples of this family include the snow-drop, narcissus, and belladonna lily. The snowdrop is commonly grown in gardens, though of late years the larger Elwes snowdrop often takes its place.

This comes from Asia Minor, and has only been known to us since 1875. Of narcissi we have not only the wild daffodil and many cultivated improvements of it, but the jonquil, the poet's narcissus, or pheasant's eye, the polyanthus narcissus, and a host of others.

THE STATELY IRIS AND GLADIOLUS, AND THE EARLY CROCUS

Then there are so-called bulbous plants whose rootstocks are solid corms, instead of being made up of fleshy scales as the real bulbs are. These belong to the flag, or iris, family, and include the crocus and gladiolus. The iris family is a huge one and its members range from tiny little bulb-rooted affairs, buried in the baked soil of Africa and Palestine, to hurry frantically into bloom in a burst of purple petals and fragrance, when moistened by rains, to the English and Spanish irises with narrow rush-like leaves which spring from underground corms, the German irises with broad sword-like leaves and thick rootstocks that creep along the surface, and the great double flowers that Japanese tend so carefully in their muddy fields, and for which they hold regular festivals for admiring their beauty. It is these Japanese flowers that we see so often painted or carved in Oriental art. The pale purple Florentine iris is thought to have been the original of the well-known fleur-de-lys—the lily of France, which appeared on the French arms and flag. This flower furnishes, in its root, the perfumed stuff with an odor as of violets, which we call orris-root.

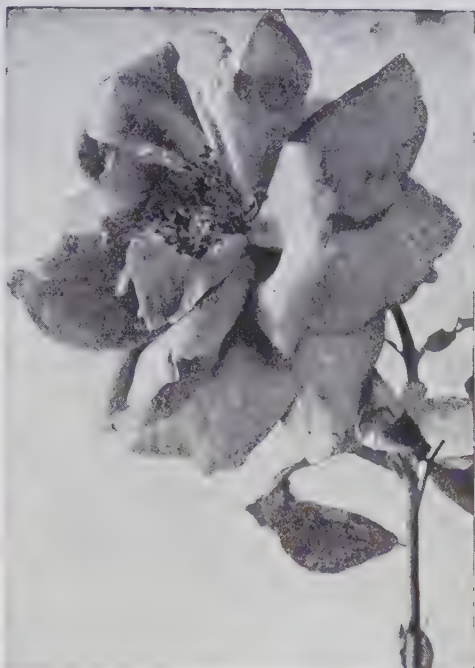
We have a quantity of garden irises growing in dry soil, but practically all of them bear veinings in a different color, or of a different shade from their background, on the lower parts of the perianth called "falls." Sometimes, moreover, there is a "crest," usually yellow or orange, like a narrow brush. This lovely flower is found in almost every marsh as far as the Middle West. Our garden crocuses are cultivated forms of species found growing wild in the south of Europe and Asia, while the gladioli come chiefly from South America.

THE NEXT NATURE STORY IS ON PAGE 5337.



THE RED ROSE

The rose is the flower of flowers. No other blossom is so delightful to the eye or so fragrant as a really fine rose, and of all varieties those of a deep, rich red, like the one shown here, are the most beautiful.



THE MAIDEN'S BLUSH ROSE

After the rich red varieties, the most delightful of roses are those of the delicate shade of pink known as maiden's blush. There are many kinds of roses with this color, and the one in this picture is a good example.



THE RAMBLER ROSE

The rambler rose shows at its best when it is seen climbing over a latticed porch. When trained along a fence it makes of the garden a pleasant enclosure, besides adding beauty to the road or street outside.



THE TEA ROSE

The tea roses, of which this is an example, are now very much in favor with rose-growers on account of their extreme grace and delicacy. The name is given because of a supposed resemblance to the fragrance of tea.



THE SWEET PEA

The sweet pea, which is so popular in our gardens on account of its fragrance and the variety of its colors, grows wild in Sicily. It is very useful to hide an unsightly spot, and forms a good screen for a fence.



THE CARNATION

The carnation has been a favorite garden flower for about 600 years. It is grown in a great variety of colors and markings. Owing to its clove-like odor, the crimson carnation is often called the clove.



THE EVERLASTING PEA

This is a very hardy plant and will thrive almost anywhere, even in stony yards. Unlike the sweet pea, whose flowers grow in twos or threes on each flower-stalk, the blossoms of this pea come in clusters.



THE WHITE SWEET PEA

The sweet pea is grown in almost every variety of color, from the deeper shades to the most delicate tints, but perhaps none is so attractive as the white pea, on account of its dainty and beautiful appearance.



THE PINK

The pink is a near relative of the carnation, and is much sought after for the garden, as it is hardy and at the same time pleasing. Another close relation is the sweetwilliam. The pink is a very old-fashioned flower.



THE IVY-LEAVED GERANIUM

A glance at the leaves in this picture will explain why this geranium is so named. In no other family of plants has the gardener's art produced a greater variety of form and color in both leaves and flowers.



THE SCARLET GERANIUM

No other plant produces such vivid scarlet flowers as the geranium. It is difficult, in all the vegetable kingdom, to find another object so handsome and striking as a cluster of blossoms of the double scarlet geranium.



THE BROMPTON STOCK

The numerous varieties of stocks that may be obtained have all been grown from one or two wild kinds. The flower shown in the picture is Brompton stock, and it can be had in purple, scarlet, and white.



THE TEN-WEEK STOCK

Stocks are found in most gardens, for they are very attractive on account of their varied colors and their masses of bloom. In the west of England the ten-week stock is called the jiloffer, a corruption of gillyflower.



THE CLEMATIS

Among climbing plants there is none more beautiful than the clematis, or virgin's bower, as it is called. The various kinds of clematis vary in size, some growing a foot high and others having stems fifty feet long.



THE BLUE CLEMATIS

The large-flowered blue clematis, of which there are several kinds, came originally from Japan. It needs a richer soil than the white-flowered varieties. Clematis climbs quickly and makes a delightfully shady bower.



THE MONK'S-HOOD

Monk's-hoods should never be planted where their roots could be dug up and mistaken for any kind of eatable root, for they are very poisonous. The name of the plant refers to the shape of the flowers.



THE DOUBLE FUCHSIA

The fuchsia is sometimes called the lady's eardrop, a reference to the drooping earrings that ladies used to wear. The flower in the picture is a double fuchsia, a beautiful development from the original plant.



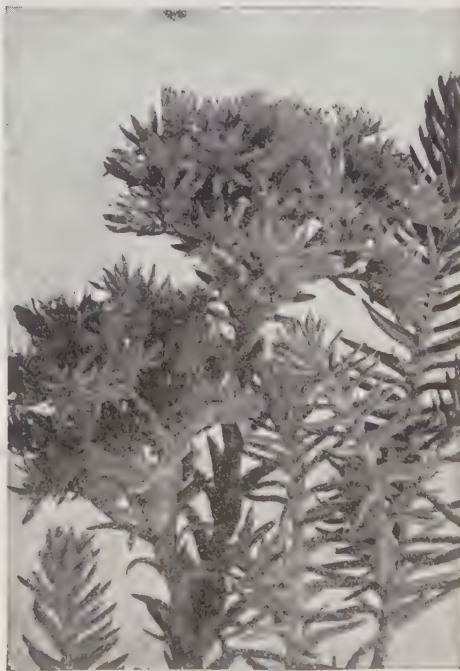
THE SINGLE FUCHSIA

This is a single fuchsia, and the plant makes an attractive bush in the genial climate of California, where it is commonly found in the gardens, a mass of blossom. The fuchsia is named after the German botanist Fuchs.



THE POLYANTHUS

Polyanthus means many-flowered, and the plant, which is probably descended from the primrose and the cowslip, has flowers growing in clusters on a leafless stem. The polyanthus loves moisture and shade.



THE SEDUM

There are many kinds of sedum, or stonecrop, that are well worth a place in our gardens. They will grow in almost any soil, and are very easily cultivated. In some places the sedum is known as midsummer men.



THE GLOBE THISTLE

Some thistles are very striking plants, but the most ornamental of the whole family is the blue-flowered globe thistle, shown here. It comes from South Russia, and its large, round flower-heads are blue.



THE LILY

All lilies are very stately and graceful. Many of them are much alike, but particular varieties are adapted to particular soils and situations. Some are admirably suited for the rock garden, others for the shrubbery



THE GOLDEN-RAYED LILY

This is one of the handsome lilies that have come to us from the East. There used to be a belief that the health of the household in whose garden this lily grew corresponded with the condition of the lily.



THE MADONNA LILY

The madonna is one of the best-known lilies, and also one of the loveliest. It will thrive well for years if left undisturbed in good soil. It was dedicated to the Virgin Mary, and is also called the lady lily.



THE TIGER LILY

This lily is very stately, and is a great ornament in any garden. It is easily cultivated, and needs a deep, sandy loam with an open but sheltered position. It was brought to England from China about a century ago.



THE RED-HOT POKER

This plant, the kniphofia, is called also the flame flower and torch lily. It is a native of Africa, and is a very striking plant. Our severe winter weather often kills the plant, or it would be grown more than it is.



THE GLADIOLUS

The gladiolus, or sword lily, is the most beautiful of late garden flowers, and should be grown by all who want attractive gardens in the autumn, for it is very easy to cultivate. It looks well with red-hot pokers.



THE VIOLA

This is one of the many pretty little flowers that have been developed by cultivation from the heart-ease, or wild pansy, of the field. Violas are well worth growing in the flower-beds of our gardens.



THE MALOPE

The malope is a showy plant with crimson and white flowers, that are handsome when massed in groups. The plant grows to a height of about three feet, and the better and richer the soil the finer will be the bloom.



THE CHINA ASTER

China asters, when well tended, always make the garden bright and gay with color. They should be grown together in masses in a deep, rich soil, and will repay all the care that may be expended upon them.



THE MONTBRETIA

This graceful plant will thrive for years on poor clay soil, and bloom well every year, but always shows, by finer blossoms, the benefit of a better soil. It is, however, essential that the soil should not be too wet.



THE DAME'S VIOLET

The dame's violets sometimes grows wild, but only when seeds have been blown or carried from a garden, for it is not really a wild flower. The blossoms are like those of lady's smock, and are very fragrant at evening.



THE HEROIC COUNTESS

WHEN the troops of the Emperor Charles V. were passing through Thuringia, after the battle of Muhlberg, in 1547, the Countess Catharina of Schwartzburg obtained from the emperor a guarantee that her people should not be molested in any way, promising in return for this safeguard to supply the emperor's Spanish army with provisions at a fair price. Then, in order that their passage through her town might not act as a temptation to the soldiers to raid the houses of her people, she had the bridge over the river pulled down and rebuilt at some distance away from any town or village. Further, she allowed all her subjects to send their more valuable goods to her castle for safe-keeping. In all these ways did the kind-hearted countess seek her people's welfare in a trying situation.

The emperor's general, Prince Henry of Brunswick, invited himself and his officers to the castle to breakfast, and the countess did her best to entertain her unwelcome and self-invited guests. But scarcely had they taken their seats when a terrified messenger arrived at the castle post-haste to say that the Spanish troops were robbing and ill-treating the people in the villages round about, and were driving off their cattle without payment of any kind.

The countess was very indignant. Arming all her retainers in the castle, she gave secret orders for every gate

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and door to be barred and bolted. Then, placing her trusted servants where they could be summoned in a moment, she entered the banqueting-hall and protested against what the troops were doing, insisting that they should be commanded to cease. The guests said that the countess must not distress herself, for the troops were only following the ordinary custom of war.

"Very well," said the countess; "but my poor subjects must have their own again, or prince's blood shall be given for oxen's blood." At a given signal the doors opened, and the guests, who had laid aside their weapons, were, in a moment, surrounded by armed and determined men, as we see in the picture at the head of this page. "Now," said the countess to the commander and his fellow-officers, "you may not leave the castle until everything, to the smallest article, is restored, and your army has passed on."

The officers were great and powerful, with an army at their command, and yet they could not stir; one woman had outwitted them all. Orders were sent to the troops to stop raiding, to restore everything that had been seized unlawfully, and to pass on, and only when the order had been strictly carried out were the officers allowed to leave the castle. For her brave action the countess received the title of Catharina the Heroic.

HORACE MANN, THE FRIEND OF CHILDREN

ONE day, about a hundred years ago, in Franklin, Massachusetts, a little lad walked to the village store. He had a basket on his arm containing rolls of plaited straw which he had helped his mother to-make, and was going to trade at the store. He was thirteen years old, but he looked older. He looked as though he never had many happy play-days.

The store-keeper took the basket and figured up the value of the straw. "One shilling and sixpence," he said; "and what will you have to-day?"

"Most of all I would like to have that book," he replied, pointing to an arithmetic on the shelf.

"The price is two shillings," said the store-keeper.

"Please set the book aside till next week, and I will have enough to pay for it."

"Take it," said the store-keeper, "and I will trust you for the money."

The boy thanked him and hurried home with his treasure. "Some day," said the store-keeper to the loafers at the door, "that boy will make his mark. The boys may taunt him because he makes straw braids, and helps his mother with the housework, but some day they will have reason to honor his name."

"Why doesn't he go to school?" asked one of the loungers in the doorway.

"He has little time for that, for he must work on the farm and help support the family, for his father died last year. In the winter he attends the school when he is not needed at home."

"Books? Well, I reckon he's read all the books at home, and all in the Franklin Library. Why, every night when the rest are in bed he reads and studies, and they say he knows more than the teacher at school. Poor child! he never has time to play. But, mark my words, Horace Mann will become a great leader."

When he was nineteen years old his teacher said, "Horace, I want you to go to college and I will prepare you."

Day after day for six months he studied faithfully, and then he took the examinations for Brown University at Providence, Rhode Island, and was able to enter the sophomore class. During his course he worked at odd jobs and taught a country school to help pay his expenses. In three years he graduated

at the head of his class. He wanted to study law, so he went to a law school in Litchfield, Connecticut, and there became known as the best student and also the best lawyer in the school. In 1823, when he was twenty-six years old, he was admitted to the bar of Massachusetts. He soon had a large practice, and was the most brilliant public speaker in the state, next to Daniel Webster.

For fourteen years he devoted himself with great success to his profession. He was chosen a member of the state legislature, and became President of the Massachusetts Senate.

However, he was not satisfied to work for himself alone. His motto in life was: Count that day lost whose low descending sun Views at thy hand no worthy action done.

He wished to do more, and to help children in school, as well as those who had no opportunity of schooling.

"We ought to have more public schools and better ones," he remarked. "There are thousands of children who are growing up without advantages. We must give them a chance."

He made speeches, and wrote papers, and as a result a board of education was created, of which he was appointed secretary. And so he began the work which later placed him in the foremost rank of American educational reformers. He revised the school laws, and reorganized the common-school system. He soon closed his law office, and devoted himself entirely to this new work.

He went to Europe to study the schools there, he delivered lectures, planned teachers' conventions, introduced various reforms, and edited a journal of education. The result of his work was the making over of the school system of Massachusetts, and from this the reorganization of the public schools all over the country.

Through his efforts the first normal school in the United States for the training of teachers was established. His greatest work, however, was to arouse public opinion to the importance of education and to direct legislative effort to the improving of educational conditions. He toiled always for the children, and the public school of to-day owes much to his influence and work.

THE NEXT GOLDEN DEEDS ARE ON PAGE 5393.

The Story of THE EARTH.

WHAT THIS STORY TELLS US

LIKE ordinary air or water, the ether can be thrown into waves, and these waves, though they all travel onward at the same rate, may be more numerous or less numerous in every second of time. In the case of the air waves of ordinary sound we find the same thing, and so we may have a keyboard for sound waves, varying in the number of waves that are made in a second. So, also, we may imagine a keyboard of the ether, and if we could play upon it we should find that the lowest, or "bass," notes, with comparatively few waves in each second, would be electric waves; higher up would be heat waves; higher still the waves of light, from red light up to violet light; and somewhere higher still, probably, the waves we call the Röntgen rays. In this keyboard of the ether sound has no place, for its waves are never in the ether, but always in ordinary material things, like air or water. Only we find many parallels between sound waves and ether waves, simply because the great, unalterable laws of wave-motion apply equally to both.

THE WONDERFUL KEYBOARD

THE INVISIBLE WAVES THAT GIVE US LIGHT AND COLOR

LIGHT consists of waves in the ether, and we know that the movement of these waves makes them quite different from the waves of sound. A sound wave is a kind of push-and-pull wave, which moves in the line in which the wave of sound is traveling; but, on the other hand, waves of light move sideways at right angles to the path in which the light is traveling. In ordinary light the waves move just as much from side to side as up and down; but, as we can understand, it is quite possible that we might have light in which the waves were all up and down, or all from side to side, and of no other kind. It might be possible to sift out from a beam of ordinary light all the rays except those traveling from side to side at a particular angle.

This can actually be done. When light passes through certain kinds of crystals which seem quite transparent, most of the waves are really kept back, and only those moving in a certain direction are allowed to go on.

This remarkable fact has the extremely bad name of *polarization*. Even the light from the sky is more or less polarized, for the waves are not equal in amount in all directions.

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If we make a sort of star-shaped picture on a piece of paper, with ever so many lines all crossing one another at a centre, then the movement of that star up or down from the paper would be like

the movement of a ray of light, and the lines would represent some of the endless number of directions of the waves that make up the light.

Now, we can understand that if a thing like this star were traveling in a certain direction, it might come to some obstacle with a slit in it at a certain angle, say, straight up and down; then all the waves, except those that happened to run up and down, would be stopped, but the up-and-down waves would travel on through the slit, and would form a ray of polarized light. The eye could distinguish no difference in it, but by other means we could prove the difference. We must not suppose that any real slit can behave like this to light, but it merely gives us a sort of picture of the kind of thing that must happen when light is polarized.

Ordinary light from the sky is polarized to a certain extent, but the best instance of polarization is when light travels through a crystal of Iceland spar, about which there is

nothing peculiar to the eye; and yet, though it looks quite transparent, it is really quite opaque to all waves of light except those that just happen to lie at one particular angle to the crystal. In many respects the laws of all waves are the same, but if we once realize the great difference between waves of sound and waves of light as regards the direction of the wave-motion in the two cases, we shall see that the polarization of light is a thing quite peculiar to waves of this kind. The to-and-fro, push-and-pull kind of waves that make sound could not be polarized.

THINGS THAT LOOK TRANSPARENT BUT WILL NOT LET THE LIGHT THROUGH

When light is polarized, it will pass through things that look transparent only under certain conditions. For instance, if it has been through one crystal of Iceland spar, it will pass through another, provided that the line of the second crystal is in line with the first; but if the second crystal is twisted a little, the light will not get through it.

It is as if a tall man were walking through a narrow door, and, of course, he could walk through any number of such doors, one after the other; but if he came to a door the slit of which, instead of running up and down, ran from side to side, he could not walk through that. That gives us an idea of the kind of thing that happens when a ray of polarized light is stopped by what looks like a perfectly transparent crystal.

We know that in the case of sound there is a thing called pitch. The piano has different notes running in a regular way from low tones to high tones. We also know that the pitch of these notes depends upon the number of waves that are made in a second, and when the number of waves is twice as great for one note as for another, the note with twice the number is an octave higher.

THE WAVES THAT MAKE SOUND AND THE WAVES THAT MAKE LIGHT

A piano usually consists of seven octaves, with perhaps three notes added. It would not need to be much larger in order to extend in both directions beyond the limits of our hearing, because about eleven octaves is the outside limit of hearing even for young ears. It is good to remind ourselves of all this because it is easy to understand, and because it helps us greatly to understand many facts

about light and color. If light is made of ether waves, the number of waves can vary just as in the case of sound, and we might expect this to mean that light has pitch, just as sound has. Indeed, this is so, though the number of waves made in a second by light happens to be millions of times greater than in the case of sound. Of course, just as in the case of sound, the number of waves may be much more numerous in one instance than in another—even twice as many; and then we shall have a kind of light the pitch of which is, so to speak, just an octave higher than in the other case. This might go on in both directions; and so, indeed, it does, but the interesting thing is, that though the ear can hear about eleven octaves of sound, the eye can see only just about one octave of light.

The natural question to ask is: What fact of light corresponds to the differences in the pitch of sound? And the answer is the wonderful fact of color.

THE DIFFERENCES IN LIGHT THAT WE CALL COLOR

The color of light is its pitch, and as we follow the colors of the spectrum, about which we read on page 5165, from red to violet, it is as if we were listening to someone playing an octave on the piano. Now, in the case of sound, we know that many notes really consist of more than one note, though it is possible, of course, to have notes made up of waves all occurring at the same rate. A tuning-fork produces such a note, but the violin, or a piano string, or the human voice, produces a note made up of a mixture of different pitches.

Now, in just the same way, it is possible to have light which is all made up of waves of one pitch, or light which is made up of any kind of mixture of waves of different pitches. Different colors vary very much as to the variety of waves of different pitch of which they are made up, and the eye usually takes these facts into consideration when it likes or dislikes certain colors.

Let us, then, remember that color is the pitch of light, just as we may say that pitch is the color of sound.

We know that when we look at the spectrum, though the various colors pass gradually one into another, yet we see there a small, definite number of

certain colors which we can name and number. We must clearly understand, however, that this appearance is only due to the particular way in which our minds happen to be made. Color really depends on the number of waves in a second; and, within the limits of our seeing, the exact number of waves produced in a second may be anything whatever, and every one of these rates really means, if only our eyes could see it, light of another color. There are thus actually countless millions of colors, though our eyes see so few.

THE LONG WAVES THAT MAKE RED LIGHT AND SHORT WAVES THAT MAKE VIOLET

Just as the number of waves made in a second varies, so also does the size of the waves. The proper name for the size of waves is wave-length, and the rule is that the longer the wave-length the fewer is the number of waves that occur in each second, and the shorter the wave-length the more frequent are the waves. Of the light that we can see, therefore, the dullest—a red that is almost invisible—has the smallest number of waves in a second and the longest wave-length; while the violet is made up of the quickest waves, which have the shortest wave-length.

Of course, we must not confuse the number of waves in a second with the rate at which the light is traveling. A tall man with very long legs and a boy with short legs may be running side by side at exactly the same rate, but the boy may be taking three strides to the man's one. In something like the same way, all the kinds of light travel at the same rate, but the waves of violet light correspond to the boy's short, quick strides, and the waves of red light to the long, slow strides of the man.

WHY THE CAMERA CAN SEE THINGS THAT THE EYE CANNOT SEE

The study of the wave-length of light is very interesting because it bears on the question as to how small are the things that we can see. The size of the wave-lengths of light is so small that tens of thousands of light waves could be put side by side within an inch. Now, when it comes to trying to see very tiny things with the microscope, the question of the wave-length of the light we are using is very important. The shorter the wave-length the nearer together may two points be which, seen by such light, will

be seen separately. But they may be so near that if afterwards looked at by light of longer wave-length they cannot be seen separately, but are seen only as one thing. So, other things being equal, it may make all the difference to what we see whether we are seeing objects by means of yellow light with rather long wave-length, or by means of blue light with much shorter wave-length.

The trouble here is that our eyes are more sensitive to the rays of longer wave-length, which are, for that reason, so much the worse for seeing tiny things by. Of the plate of a camera, however, just the reverse is the case. It is much more affected by waves of short wave-length than by those of long wave-length. So, where our eyes fail, the camera can, to a certain extent, be used together with the microscope, to see, by means of violet light, things so tiny that they could be seen in no other way.

THE STRANGE EFFECTS OF THE WONDERFUL RÖNTGEN RAYS

Everyone has heard of the X-rays, often called the Röntgen rays, after their discoverer, Professor Röntgen. He himself called them the X-rays, because X is usually used in algebra to mean something unknown, and he did not know what these waves were. It is probable, however, though not yet certain, that the rays are really light of a very shrill pitch, so to speak, perhaps several octaves above the violet.

We do not yet know how many waves in a second make up X-rays, nor do we know the length of the waves. It is said that some people can faintly see the Röntgen rays. At any rate, it was a very great mistake to suppose that all Röntgen rays were the same—for, indeed, various kinds of Röntgen rays differ very greatly, probably quite as much as red light differs from violet light, and very likely for just the same reason.

At first the X-rays were a curiosity; then they became useful because, when they were passed through the body, different parts of the body threw shadows which often gave very valuable information to the doctor; and then, later still, it was found that the X-rays produced very marked and wonderful effects upon living creatures, including ourselves. Of course, when this was learned, it became very important to study the rays—to find out all the different possible

kinds of them, and to learn exactly how they differ in their effects upon the human body.

Below the red rays there are, as we know, the rays of radiant heat. These also vary very widely, just as the rays of visible light do; and a great American student of the subject has made wonderful discoveries about them. These rays cannot be seen, and when rays cannot be seen they can only be studied in some other way. They can be studied, for instance, by means of the heat they produce; and so this man of science invented a marvelously delicate instrument, which is really nothing more or less than a thermometer, but very much more delicate than the best of ordinary thermometers. By means of this instrument he has been able to study heat waves in detail, and he has shown that they differ from each other, and, indeed, make up a long spectrum just like the spectrum of visible light.

The one is, of course, a continuation of the other. This spectrum, too, contains lines and places which correspond to the dark lines that can be seen in the spectrum of visible light.

THE KEYBOARD OF INVISIBLE WAVES THAT GIVE US LIGHT AND ELECTRICITY

This wonderful keyboard of waves in the ether extends still farther below the heat rays. The lower waves are slower and bigger. We know them best by their electrical properties, for they are electric waves—the waves that run in the ether inside the wire of a telegraph or telephone, and the waves, needing no wire, which are used in wireless telegraphy. It is extremely important and useful for us to understand that simply by moving down the keyboard, so to speak, from visible light we come to the waves that make an electric current.

Now, this can only mean that light and electricity are as like each other as the sounds produced by the middle octave of a piano and the sounds produced by the notes near the bottom of the piano. We rightly use the one word, sound, to describe both of these things, for they are really the same. We might say, then, that electric waves are really light waves which we cannot see, but this is not the best way of putting it. The best way of describing them is to speak of the electric theory,

or the electro-magnetic theory, of light. This theory simply means that light is a kind of electricity. All these waves in the ether, that travel at the same enormous speed, are really of one and the same kind, and the only word that describes them is the word electric.

THE LIGHT WAVES THAT EXCITE OUR EYES AND THE WAVES THAT EXCITE OUR SKIN

It so happens that we possess in our bodies eyes which have the power of being excited by about one octave of these electric waves; and to that octave we give the name of light. It is really electricity. Other electric waves which happen to be longer, and of which fewer happen to be made in a second, affect us in a different way. They do not excite our eyes, but they excite our skin and perhaps make us jump.

Electric waves, including the waves of light, move in straight lines, all of them at a known speed. Just as in the case of sound, or the power of gravitation, or the power of magnetism, the intensity of light becomes less very quickly as we pass away from the place where it is made. The rule is that at twice the distance it has one-fourth the intensity; at three times the distance one-ninth the intensity, and so on. In other words, the intensity of light, like the intensity of all these other things, varies inversely as the square of the distance.

As in the case of radiant heat, some substances will let light through, and others will soak it up or absorb it, and others will reflect it from their surface. No one can yet explain what are the differences in different kinds of substances which make them behave toward light in these different ways. Of some things, however, we can be certain.

HOW LIGHT IS LOST BY BEING CHANGED INTO HEAT

One is that when light is absorbed it is not destroyed, for we know that nothing is ever destroyed. What eternally happens everywhere, inside our bodies and in the great world, is not destruction, but transformation; and in this case the light is transformed into heat. That is only another way of saying what we all know so well—that things which the sun shines upon become hot, especially if they are dark things. We know, also, that when substances let light through them, the light

waves travel through the ether in the substance in question—as, for instance, through a pane of glass. But however transparent a thing is, it does not let through all the light that comes to it. This is true of a pane of glass, however polished and smooth, and it is true of the beautiful front parts of our eyes.

WHY WE CAN SEE OUR FACES IN THE WINDOW OF A RAILWAY TRAIN

The proof that these things are not quite transparent is plain, because, if we go about it in the right way, we can always see little reflections from a pane of glass, as when a train is in a tunnel, or from the surface of other people's eyes. These reflections mean that light has been reflected to our eyes, and therefore that the thing is not quite transparent.

Although we do not know why one thing reflects and another does not, we can learn the laws of reflection. These laws really hold good, not only for light, but for radiant heat and for sound; and everyone who has played billiards or pool, or who has thrown an india-rubber ball against a wall, knows something of the laws of reflection.

We know that if we throw a ball straight at a wall, it comes straight back to us; if we throw it sideways, it goes sideways, and it comes off just as much sideways as it was thrown sideways. If a ball on a billiard-table is rolled gently against the cushion at an angle, it will come off again at the same angle. The angle at which the ball approaches the cushion is called *the angle of incidence*, and the law for the billiard-ball, for light, and for all these other cases is that the angle of incidence and the angle of reflection are equal.

HOW THE EYE AND THE MAGIC LANTERN ALTER THE COURSE OF LIGHT

There is another thing which happens to light, as it does also to radiant heat and to sound, and it is called *refraction*. We must always distinguish this word from reflection, which means bending back; but refraction really means breaking back. When a ray of light passes from one thing to another, it is always broken, or refracted, and this refraction also has laws. It is extremely important, for we are able to see things only by means of refraction. The whole of the front part of the eye is really a wonderful piece of machinery for refracting the rays of light that come in so

that they shall all be made to fall on the retina, or curtain, at the back of the eye, in such a way as to produce a clear image of the thing at which we are looking. Eyeglasses of every kind are used for the same purpose. The use of them all, and of every kind of microscope and telescope, the glasses in front of a magic lantern, and so forth, is due to their power of refracting the rays of light.

Different things have different powers of refracting light. The diamond, for instance, alters the course of the rays of light passing through it much more than water does, this being the reason why the diamond is such a brilliant gem.

But the rays of light themselves differ in their power of being refracted; and refraction is the key to Newton's great experiment, shown on page 1674. His prism was simply a means for refracting the rays of light passing through it, and the success of his experiment depended on the fact that the different kinds of light are refracted each to a different degree in a regular way. The existence of the spectrum depends entirely upon the possibility of refraction.

WHY WE NEVER SEE THE STARS EXACTLY WHERE THEY ARE

If we ask why rays of light are refracted when they pass from one thing to another, a partial explanation can be given. It is that the speed of the light waves is slightly altered when they travel through a different substance, and the different waves are differently affected. The simple rule is that the denser the subject through which the light is passing the more it is retarded.

When the light traveling through empty space reaches our air, it is very slightly retarded and bent. A consequence of this refraction produced by the air is that we see no heavenly body where it really is, but at some spot a little distance away; and we can actually see the sun when it is below the horizon because the rays are refracted as they pass through the air. When passing from air to water, light is refracted yet more, and the explanation of the facts is that light waves travel slightly slower through water than through air because water is denser than air.

We have seen how refraction produces color by splitting up white light. But there is a way in which reflection also

produces color, and practically all the color of the world is produced by reflection. It is true that sunlight has its own glorious color, for though we call it white light, it is really quite golden; and it is true, also, that luminous things, like flames and fires, have colors of their own, because the light they produce has a high proportion of red or yellow or green or violet rays. But, apart from that, the earth and the things upon it have colors, though they are not themselves luminous; and these colors are produced by reflection from the white light that falls on them.

This reflection of theirs is *selective*, as we might say. A white thing does not select; it is white just because it does not select, but reflects all the waves of light which happen to fall upon it. Not

matter can choose different parts of it to refract in different ways, parts of it to reflect, and parts of it to absorb. Even transparent matter, as in the case of colored glass, will absorb certain kinds of light, and will let other kinds through; so that not only are we dealing with something in the ether about which very little is known, but at every stage we are met with questions of the relations between this ether and ordinary matter.

All these questions have yet to be answered, and they must occupy science for ages to come.

There is another great department of the study of light about which huge books have to be written. It deals simply with rays of light and the laws of their bending. This requires a great



Here we see the remarkable property of double refraction possessed by Iceland spar, which causes the letters on the card at the back to appear twice when seen through the crystal. If the spar is tilted at a certain angle it becomes opaque, so that we cannot see through it. This is shown by the ends of the crystal in the picture.

being luminous, it makes and creates nothing, but it will simply reflect whatever light falls upon it. If we throw red light upon it, it will be red; if we throw upon it the mixture of lights called white, it will be white. This is the great difference between the things that are not luminous and the things that are.

We have only to think a little to see what a huge and difficult subject light must be. Such a thing as sound is simplicity itself in comparison, though, as both are made of waves, they have certain laws in common. After all, sound is made of waves in matter, and in studying it we do not have to go outside what we know of matter, though, of course, that is little enough. But light consists of waves in the ether, and yet it is made by matter; it can be reflected and refracted by matter, and

deal of mathematics, and is called *mathematical optics*. To this subject, also, there is no end, and it is very important, because it underlies everything that we do and shall do with microscopes and telescopes and all the other different kinds of optical instruments.

And men have still, moreover, to study the great discovery of our own times, that light is really electric, which means that we cannot really understand it unless we study all kinds of electric waves. Every fact we learn about light is a fact of electricity, and every fact we learn about electricity helps us about light. There is no discovery for which Great Britain will be more certain to be celebrated than the discovery that the light which fills the universe is a kind of electricity and magnetism.

THE NEXT PART OF THIS IS ON PAGE 5355.

THINGS TO MAKE AND THINGS TO DO

WHAT THIS ARTICLE TELLS US

EVERY American or Canadian boy knows something about baseball, though not all realize how important the game has become in the United States. Millions of dollars are invested in fields and stands where the games are played. Factories are kept busy making balls, bats, masks and uniforms for players, and many men make their living from the game in different ways. Below you learn something of the importance of the game, and also the chief rules are given in simple language, so that two teams of boys may play without further instruction. You can, however, get the book of rules for a few cents. The description will also enable sisters and mothers to understand the game.

AMERICA'S NATIONAL GAME

ONE of the first desires of every boy is a ball of some sort. He will make one of cloth if he cannot get it in any other way. Think how many of our most interesting games are played with a ball or balls. One can mention, among others, tennis, football, polo, ninepins, basket-ball, cricket and, greatest of all, baseball.

The last named can fairly be called the national game of the United States. In every part of the country, when the weather permits, hundreds of thousands of boys and young men play at every opportunity. It is the most important game at the colleges and boarding schools during the spring months, and then besides thousands of men play the game for regular salaries. A good player may receive several thousand dollars for the season.

Nearly every large town or city has one or more professional teams. This means that they play baseball as a business, and receive pay for it. They play with the teams from other cities, and millions of dollars are invested in buildings and grounds for the purposes of the game. In the largest cities some games have drawn the attendance of more than 40,000 spectators. Among the enthusiastic lovers of baseball are high officers of the government, and officers of the army and navy. Many distinguished men attend every game their engagements will permit, and many women also are enthusiastic spectators.

The oldest organization now in baseball is the National League, which is composed of a club in New York, Chicago, Pittsburgh, Philadelphia, St. Louis, Cincinnati, Brooklyn and Boston. The American League is made up of a club in Philadelphia, Detroit, Cleveland, New York, Chicago, Boston, Washington and St. Louis. These are called the "major leagues." There are many minor leagues in various parts of the country.

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CONTINUED FROM 5133

The team which wins the greatest percentage of the games played in each league is the cham-

pion of that league. Then the winners play for the championship of the United States, which means of the world, for baseball is played more in the United States than anywhere else.

Though the game is played more in the United States than anywhere else, it has also gained a foothold in Canada, Australia, Japan, the Philippine Islands and many other countries. The Japanese and the Filipinos take to the game very quickly and become good players.

Below will be found a description of the game written in simple language.

THE FIELD

A regulation baseball field consists of a level stretch of ground upon which is marked out, by white lines, a square, the sides of which measure ninety feet in length. The space within these lines is called the *diamond* or the *infield*. For boys' use it is usually smaller. At each of the four angles is set a *base*. The black one, called the *home* plate, is set level with the surface of the ground. For important games it is made of whitened rubber and measures seventeen inches across. The three other bases are flat bags filled with sawdust, fastened to pegs driven into the earth. The bases at the other corners of the diagram are known, respectively, as *first base*, *second base*, and *third base*.

The lines running from the home plate to first base and third base are prolonged, as you may see. All territory between them is called *fair* ground; the space behind and outside of the diamond is called the *outfield*.

THE PLAYERS AND THEIR POSITIONS

A game is played by two teams of nine players on each side. These are known

as: the pitcher, the catcher, the first baseman, the second baseman, the shortstop, the third baseman, the right fielder, the centre fielder and the left fielder. The pitcher and the catcher constitute the *battery*. The three basemen and the shortstop make up the infielders. The three other players are the outfielders.

When a team is *in the field* its players take the positions indicated in the diagram. The catcher's place is at C, a few feet behind the home plate. The pitcher stands near the centre of the diamond, at equal distances from first and third base and just short of an imaginary line joining them. This region is known as the *pitcher's box*. The first and

The ball is made of yarn wound about a rubber and cork centre and covered tightly and smoothly with leather. The regulation ball weighs between five and five and one-fourth ounces, and measures between nine and nine and one-fourth inches in circumference. For boys' games a smaller ball is better. The bat is a round wooden club, not longer than forty-two inches, nor over two and three-fourths inches in diameter at the thickest part. The gloves or mitts of the catcher and the first baseman are larger and more heavily padded than those of the other players; in fact, there is no restriction governing their size. The catcher, especially, needs a very heavy glove. In addition, he is



third basemen take positions a little inside of and back of their bases. The second baseman stands slightly back of his base and somewhat over toward first base. The station of the shortstop is near the point indicated, between second and third bases. The three outfielders are placed more or less as indicated by the black dots in the diagram. They play close in or far back, according to the batter. If he is accustomed to drive the ball a long distance they will go back too, so that they may not have to run too far to catch the ball. The entire team is thus arranged to cover the greatest amount of fair ground.

Each player has a padded glove as a protection in stopping thrown or batted balls.

provided with a mask made of heavy wire to protect his face and a padded or inflated chest-protector to guard against injury from the swift throws of the pitcher or foul tips from the bat.

HOW THE GAME IS PLAYED

The two teams alternate at bat and in the field. The side at bat endeavors to force runners around the bases against the opposition of the team in the field. Every man making the circuit of the bases and arriving at the home plate safely, scores one *run* for his side. When, however, three men of the team at bat have been *put out* by the opposing fielders, then the side which has been at bat must take the field, while the players of the

side which has been in the field now take their turn at bat. When they have had three men put out, they in turn take the field while the other side comes to bat again. One such period in which each team has one turn at bat and one in the field is called an *inning*. Nine innings constitute a game, which is won by the team with the largest total score of runs. In case of a tie, as many extra complete innings are played as are necessary to give one team or the other the lead. If one team has made more runs in eight innings than the other has made in nine, the other half of the ninth inning is not played. The members of each team take their turns at bat in regular rotation, according to the batting-order which is arranged by the captain at the beginning of the game and must be followed throughout. When a substitute replaces a player, he fills the same place in the batting-order as the man whose place he has taken.

The game begins, then, with one team in the field and the other prepared to bat. The home team has the choice of going first to the bat or to the field. Behind either the catcher or the pitcher is usually the position of the *umpire*, whose duty it is to render decisions on all plays. The first batter takes his position at the side of the home plate and facing it, but with his head turned to watch the opposing pitcher. It is now the problem of the pitcher so to throw the ball that it will pass over the home plate and yet make it difficult for the hitter to meet it squarely with his bat; or else to make the batter think that the ball will cross the plate, and thus force him to strike at a ball out of his reach.

WHAT IS A STRIKE?

If the pitcher is successful in delivering the ball over any part of the home plate, at a height between the knee and the shoulder of the batsman, and the latter does not hit it, it is called a *strike*, whether the batsman has struck at it or not. Again, if the batsman strikes at a pitched ball without hitting it, a strike is likewise called, whether the ball has passed over the plate or not. Three strikes, if the catcher holds the ball on the third, render the batter out. A *foul* is also counted as a strike unless it would make the third one.

On the other hand, if the ball, after being delivered by the pitcher, fails to pass over any part of the plate, or passes over the plate above the shoulder or below the knee, then, provided the batter does not strike at it, it is called a *ball*. Four such *balls*, delivered before three *strikes* have been pitched, permit the batter to *take his base*, that is, to proceed to first base without being liable to be put out. Further, if a batsman is struck by a pitched ball, provided he has not struck at it and the umpire is satisfied that he had made reasonable effort to avoid being hit, the batter is entitled to take his base. Decisions on pitched balls are in every case announced by the umpire, whose authority is supreme in all questions of judgment or opinion. In the most important games there are two umpires,

one of whom decides on balls or strikes and the other watches the bases.

FAIR AND FOUL BALLS

Meanwhile, of course, the batsman is at liberty to try to hit any ball he pleases that the pitcher throws. A ball so hit may be called in either of two ways, depending on the direction it takes from the bat. A batted ball that falls and remains on foul ground, or a ground hit that first strikes fair territory and then rolls to foul ground between the home plate and first base or between home and third base, is called a *foul hit*, or, briefly, a *foul*. Similarly a *fair hit* or a *fair ball* is a batted ball that drops on fair ground and remains within it; but if a batted ball is touched by a player on fair ground and is then diverted over the foul line, it is still a fair ball; again, a ball batted to the *outfield* and first falling on fair ground, is a fair ball, even though it later rolls into foul territory; a grounder, i.e., a batted ball rolling along the ground, which first strikes foul ground and then rolls into fair territory between home and first base, or home and third base, is a fair ball.

If a batted ball, whether fair or foul, is caught by any fielder before it touches the ground, the batsman is out. Such a batted ball which rises in the air or travels a considerable distance before touching the ground, is called a *fly* to distinguish it from a grounder. On a foul ball, even though not caught, the batsman cannot advance to first. On a fair hit ball, however, unless it is caught as a fly by a fielder, the batsman is entitled to run to first base and to advance as far around the bases as he can without being touched by the ball in the hand of a fielder when the runner is not himself touching a base with any part of his body. If the base-runner is so touched, he is out. To put a runner out on his way to first base, a fielder need not touch him with the ball, but need merely hold the ball securely while with any part of his own body he touches first base, before the runner arrives there.

At all the other bases, however, including the home plate, as well as between any two bases, a fielder to put a runner out must touch him with the ball while the runner is off his base, except as mentioned in the next paragraph. If the fielder, in attempting to make a put-out in this way, drops the ball, the runner is safe.

THE ART OF BASE-RUNNING

Let us suppose, then, that our batsman has reached, let us say, first base safely. He has then completed the first quarter of his journey to the home plate. The other three quarters still lie before him, filled with dangers for the unwary runner. The man on base must be constantly on the alert, ready to advance on a hit by a team-mate, or a slip or moment of forgetfulness on the part of the opponents. Yet, at the same time, he must remember that they too are watching for a chance to take him unawares away from the

base. He must foresee, if possible, the moves of the enemy and refuse to be trapped. Never must a base-runner allow his mind to be distracted from the immediate object of the game; always he must know exactly what player has possession of the ball and be ready to act should that player throw it to catch him.

On a safe hit by a succeeding batsman, the base-runner may advance as many bases as he thinks he can in safety. In fact, when a runner is on first base, or on second with first occupied by another runner, or on third with both first and second occupied, the runner *must* advance when the batter hits a fair ball, to make room for the batter, who on hitting the ball becomes himself a base-runner. Otherwise, since only one runner can occupy a base at a time, the ball need merely be thrown to the next base, which is touched by the fielder receiving the ball; the runner who should have reached that base is thereupon out without having to be touched with the ball. Such a play is called a *force-out*. It frequently results in a *double play*; this means a play by which two men are put out. A double play is completed after a force-out, when the ball is thrown to a base before the batsman has reached there, thus putting him out also.

On a *fly which is caught*, however, a runner must not leave his base until the ball has actually been caught. If he does he is out if the ball is returned to that base before he can return to it, thus again becoming one of the victims of a double play. Immediately after the catch, he may advance if he can. On a long fly-out to the outfield this is very often possible.

The instant the third put-out has been made, all attempts at advancing or scoring are of course useless. Indeed, after two are out, a run is not scored by a runner crossing the plate on a batted ball as a result of which the batsman or some other base-runner is put out for the third out, even though home may have been reached before the put-out was actually made. A base-runner struck by a batted ball is out.

THE MEANING OF TERMS

The following are additional terms commonly used in connection with a ball game. The term a *hit* is usually restricted to a batted ball on which the batter reaches base safely, without profiting by an opponent's misplay or causing the put-out of another base-runner. A hit for one base is called a *base hit* or a *single*; a two-base hit is also known as a *double* or a *two-bagger*; a three-base hit, a *triple* or *three-bagger*; a hit for all four bases, a *home run*. A *bunt* is a slow hit merely tapped within the infield by the batsman; if a bunt results in a foul, a strike is called. A *time at bat* is recorded each time a player takes up and completes a turn at bat; if he receives a base on balls, or goes to first as a result of having been hit by a pitched ball, or makes a sacrifice hit, he is not charged with a time at bat. A *sacrifice hit* is

either a bunt which results in the batsman's being put out on which a team-mate is enabled to advance a base, or a fly-out to the outfield which makes it possible for a base-runner to advance safely after the catch; a sacrifice is, of course, useful only when no one or only one is out. A player's *batting average* is a record of the percentage of safe hits he has made out of his total number of times at bat. A *foul tip* is a strike on which the ball has been merely touched by the bat; it counts as a strike in all cases, but does not in itself count as an out if caught, as would a foul fly.

A *put-out* is, as its name implies, the actual putting out of a batsman or base-runner by a fielder; thus in the case of a strike-out, the put-out is credited to the catcher since he handles the ball last in the operation. An *assist* is credited to a player when he, by a fielding play, aids in the put-out by making possible its successful completion by another. An *error* consists in a fielder's misplay in handling the ball, so as to make a probable put-out fail, or so as to enable a runner to gain a base, which, under perfect play, he would not have reached.

A *balk* is a false motion made by the pitcher to deceive a base-runner; it consists usually in making a motion to deliver the ball to the batsman and failing to do so, or in pretending to throw to first base when it is occupied by a runner and failing actually to throw the ball. When a balk is called by the umpire, all runners who are on the bases may each advance a base without being put out. A *wild pitch* consists in the pitcher's delivering the ball to the batsman so high or so far out as to be out of reach of the catcher. A *curve* is a ball thrown in such a manner by the pitcher as to change its direction sharply just before reaching the plate. A ball that curves to the left as seen from the pitcher's position is called an *out-curve*; one to the right, an *in-curve*. A *drop* deflects downward; a *raise-ball* rises slightly. In throwing these curves the wrist is twisted sharply at the moment the ball is let go, so that the ball has a rapid revolving or spinning motion at the same time that it is traveling in a direct line toward the plate. This spin of the ball creates a cushion of air piled up on one side of the ball, the resulting unequal pressure causing the ball to swerve as its speed of flight lessens. The ball curves in the direction in which its front portion is turning as it revolves during its flight. *Change of pace* consists in varying the speed at which the ball travels from the pitcher's box to the plate.

Many pitchers can curve the ball, but few can put it exactly where they wish to throw it. When a pitcher can do this so well that he can deceive the batter he is said to have good control. This was what made Mathewson such a great pitcher. Other pitchers could throw faster balls than he, and a few could curve them as much, or more, but he had such good control and studied the weaknesses of the batters so well that he won many games.

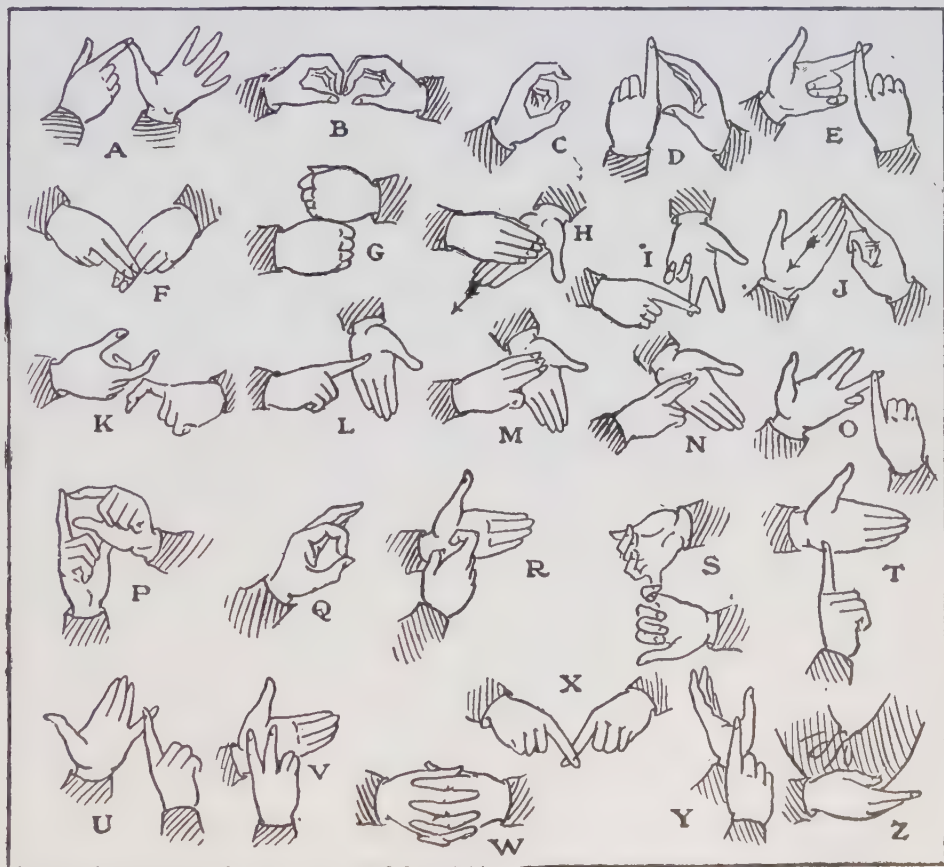
HOW TO TALK TO THE DEAF AND DUMB

THE scientific method of educating the deaf and dumb, or, as they are more accurately called, deaf mutes, is by word of mouth, and they are taught to watch the lips of the person speaking to them, and from the movements of the mouth to understand what he is saying. It is amazing with what skill a well-trained deaf mute is able to follow a conversation in this way.

The older method of communicating with persons afflicted in this way was by speaking with the hands, and as there are still many thousands of deaf mutes who know of no

the left hand from the tip of the middle finger, as indicated in the picture by an arrow. In talking to a deaf mute, the words are spelt out, and it might seem that this would be a very tedious and lengthy process. As a matter of fact, it is astonishing with what rapidity a conversation can be carried on when those using the sign language are skilful and well practised in the art.

One may sometimes see at a place of worship a little group of deaf mutes seated in a corner of the church, with an interpreter giving in the finger language the substance, at any rate,



THE ALPHABET, FORMED BY THE HANDS, WHICH IS USED IN TALKING TO DEAF MUTES

other method of carrying on a conversation, it will be well if every boy and girl learns the deaf and dumb alphabet, as it is called, so that, should the necessity arise, they will not be cut off from all communication with the deaf person.

The complete alphabet is given on this page, and can be easily learned from the pictures. In every case, with the exception of H and J, the hands are stationary while in position to form the letter. In the case of H, the whole of the right hand is moved down the left palm in the direction of the arrow, and to form J the right forefinger is drawn down

of the sermon. To make a break between the words it is common to separate the hands and jerk them downwards, or to make the motion of snapping the fingers. Of course, those who talk much with deaf mutes in this way soon acquire a whole number of signs to express well-known words or thoughts without spelling them. For instance, holding up the right thumb means good, and the right little finger signifies bad. To point upwards means God or heaven, and there are many others. Numbers up to about twenty are denoted by holding up the necessary number of fingers, and larger numbers are usually spelt out in full.

THE GAME OF "WHAT IS WRONG?"

SOME games teach us how to use our bodies, and others teach us to use our brains. The game of "What is Wrong?" develops the mind by testing our powers of observation.

We all know that in every house certain things have a regular place. For instance, we may have a clock on the mantelpiece, and standing upon each side of it a vase.

Now, these things usually occupy the same place always. They are never shifted except for cleaning and dusting. That position on the mantelpiece is their recognized place.

We may possibly get so used to seeing a photograph placed at a certain angle upon a certain spot that it seems to become part of the room, and we cannot imagine it in any other place except that which it occupies. We feel sure that if it were shifted to any other spot we should notice the fact at once. In all probability, if, instead of a little thing like a photograph, a large piece of furniture were moved, we should notice it quickly. But it is really wonderful what we do not see, even when we are looking at things, if our mind is not actively concentrated and our power of observation is not acute.

In playing the game of "What is Wrong?" one player stays in the room while all the others go outside the door. The player in the room makes some little alteration in the position of a thing that usually stands upon a certain spot, or is placed in a certain way, and when he admits the other players he asks them what is wrong. The players, as they discover what is wrong, sit down until all have made the discovery or given it up. Then the player who first found out what had been changed remains in the room and moves

something in his turn while the others are outside, and so on. Before we begin to play the game, we should fix a certain time, say, two minutes, in which the changed object must be pointed out. If in that time no player succeeds in discovering the thing that has been moved or altered, then the thing is shown, and the players go outside again, the same player remaining in the room and altering the position of something else. If we like we may give points for success. The one who remains in the room scores five points if his alteration is not discovered by any of the others. If, on the other hand, the changed object is discovered, then the first discoverer scores five points. At the end of the play we count up the points, and the player who has scored the greatest number wins the game.

A variation of the game is for the player who remains in the room to change not one object only, but a number. The other players then have more to discover, and there is less constant walking in and out of the room.

There are many things that we may alter in every room. For instance, we might turn a photograph upside down in its frame; if the poker is kept on one side of the fireplace we can change it to the other side. Should a piece of music be on the piano we could turn it upside down. Vases may be changed, and pictures that hang at an angle from the wall may be made to hang flat against the wall; books may be turned over on the table so that their front cover is downwards. In fact, the number of things that can be altered is almost endless, and the game can be played in any room that is available.

HOW TO READ THE MARINER'S COMPASS

EVERY boy, especially every boy scout, ought to be able to read the mariner's compass—that is, to repeat the 32 points from the North by the way of the East and round to North again—without any hesitation. This is one of the first things that midshipmen and sailor boys are taught to do, and they also learn to read it backwards, so as to be thoroughly familiar with all the 32 points. It is only when we know them properly that a compass becomes of real use to us when out sailing or walking. The picture here shows the position of the 32 points. The four cardinal points are marked N., S., E., and W., and represent North, South, East, and West. The arrangements of the points between the cardinal points is similar in all four quarters of the compass card. Midway between N. and E. is North-east, marked NE., and midway between N. and NE. is NNE., called North-

north-east. The point midway between NE. and E. is East-north-east, marked ENE. The remaining points are N b E., called North by East; NE b N., North-east by North;

NE b E., North-east by East; and E b N., East by North. The other quarters of the card have corresponding names. As we know, the magnetic needle usually points to the magnetic pole, and not to the geographical pole. The difference between the two directions is called the variation, and as the variation of the compass differs in different parts of the world, sailors have to learn how to allow for this, wherever they may be. If the variation were not taken into account by seamen, the consequences might be very serious indeed, as even a slight deviation from the true course that should be sailed by a ship might possibly send it upon the rocks, and result in the vessel being wrecked and all hands lost.



The thirty-two points of the compass.

MAKING A FRETWORK BRACKET

ANY boy or girl accustomed to handling tools can make the daintiest and prettiest little fretwork article with the aid of a fret-saw and some fretwood. Patterns and designs can easily be obtained, and they range from the most intricate and delicate model to the simplest photograph frame. From the large number of articles open to selection, we shall choose a corner bracket of dark wood, such as will support a little vase of flowers.

An ingenious fretworker can utilize the wood of an old cigar-box for a bracket. But whatever piece of wood is chosen, it should be quite free from knots and blemishes, close-grained, unwarped, and neither too soft nor too hard.

It is always well to get a few really necessary tools first, and add more to them as they are required. Among the things that we must have are some saw-blades, a fretsaw frame, and a small drill. An ordinary small saw will be found useful in the first rough shaping of the wood for the parts of the bracket. And in putting the parts together we shall want a few brads and a little hammer.

Now we can begin to make the bracket. We first draw the design or gum the paper pattern that we have obtained on to the wood, taking care to see that the grain of the wood runs lengthways. When the gummed paper is quite dry, we use the drill to make a hole in each of the spaces that has to be sawn away in the pattern covering the wood, taking care to place a board beneath the fretwood to prevent the drill from making holes in the table. We fix a saw-blade into the saw-frame at one end, pass the saw through one of the holes pierced in the wood, and fix the saw-blade to the other end of the frame, so that the blade can work straight up and down along the line of the pattern. Beginners will frequently find great difficulty in turning corners, and for this reason, in order to save disappointment, it is well worth while to practise a little with lines, angles, and curves on an odd piece of wood before starting on an elaborate piece of ornamental work.

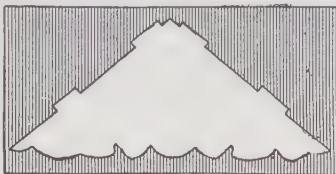
It is better to saw out the inner spaces in the wood first, and clear out those in projecting parts of the pattern last, as these are the most fragile and likely to snap off. Skill and deftness are needed in handling the fretted work. Even when all care is used, from some flaw in the wood or undue pressure at one part, the wood at the edge may snap. This can be glued on again, and even when the breakage is towards the centre,

the broken portion may be sawn off, a new piece of wood glued on, the outline traced upon it, and the article finished. If the saw works with difficulty, we can rub a little soap on the back of the saw-blade. Having sawn out all the spaces in the three pieces of wood for the bracket—two for the sides and one for the shelf—we must smooth the edges where the saw has worked, and clear off the paper pattern.

The latter can be removed by wetting it with warm water. If some of it still adheres, it can be rubbed off with glass-paper when dry. Sand-paper is also used for smoothing the rough edges that may be left by the saw. To put the parts of the bracket together, we may glue the edges. This is the easiest method if the bracket is small and not intended to support any great weight. But with a larger bracket the parts can be jointed and fastened together by little screws or small brads. Jointing and nailing is the method followed in putting together the bracket shown in picture 3 on this page. It will be seen that on each of the two sides of the shelf, seen in the second picture, little projections are left, to fit into the oblong holes that are cut to receive them in the upright parts of the bracket. Only one of these upright



1. Design of one of the upright parts of the bracket.



2. The shelf of the bracket.



3. The corner bracket when it is finished.

pieces is shown in the first picture, and the three projections at the back are to fit into three corresponding recesses that have to be sawn at the back of the other upright piece. We shall now want to stain or polish our bracket in some way. Polishing with a little wax polish, bought ready made, is a simple method of

treatment. We first oil the wood by passing over the surface a piece of rag dipped in boiled linseed oil. The bracket is then allowed to dry, and is rubbed over with a piece of dry rag, then the wax polish is applied to the bracket with a little pad made of linen. A drop or two of polish is placed upon the pad, and the bracket is then rubbed with a light, brisk, circular movement. This process is repeated a number of times until the whole bracket attains an evenly-polished surface. If we prefer to do so, we may varnish the bracket with oak varnish, or we can use some of the many stains or enamels which are sold everywhere and generally give good results. In wax polishing we should be very careful to rub lightly.

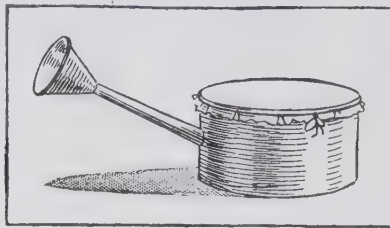
This is the secret of the whole art of wax polishing, for if we rub vigorously we shall at once make the surface dull. We may find it rather difficult at first, but, with a little perseverance, we shall succeed in the end.

A BOX THAT DRAWS VOICE PICTURES

IT is possible to draw beautiful designs with the voice, the designs varying in form according to the strength or pitch of the note that is spoken or sung. On page 4092 are given some of the designs that can be drawn in this way; and it is possible for a boy to make a simple instrument that will enable him to draw voice pictures of this kind.

Get one of those small tin saucepans that are sold at the hardware shop for about five cents. Then open the end of the handle, if it is not already open, and also make a hole in the saucepan where the handle joins it, so that the handle is really a tube into the saucepan. The shop-keeper will probably do this for us for a small charge if we ask him. Now take a piece of thin india-rubber, such as toy balloons are made of, and tie this tightly over the top of the saucepan, just in the same way as covers are tied on to jam-pots, taking care that the india-rubber is really well stretched. A piece of a bladder or toy balloon does excellently for this purpose. A paper funnel made like a grocer's sugar-bag, with the edge stuck down, should be inserted in the end of the handle, and our eidophone, a name which means "to copy sound," is complete so far as its construction is concerned. The picture on this page shows its appearance.

We now have to prepare the surface of the rubber covering so that our voice may be able to draw designs upon it. There are various ways of doing this. We may put a



A little box that makes voice pictures.

very thin layer of colored glycerine over the drum, or we may spread the finest sand evenly on the surface. Then, if we sing a note steadily and continuously down the funnel, the sand or glycerine will gradually take a regular form until some beautiful and delicate geometrical design is produced. By practice, of course, we shall learn to sing the notes continuously at suitable pitches, and according to the change in the note so the design will change. The pictures on page 4092

show how varied these voice pictures may be. Some will come like flowers, others like ferns, and others, again, like trees. The science of voice pictures is explained on page 5061. If we wish to get even more delicately detailed designs than the fine sand produces, we may try lycopodium powder, a fine yellow powder that is the seed of the plants

called lycopodiums. This is to be obtained at the drug store, where also we may buy glycerine of various colors. The druggist will color the glycerine for us according to our order.

In place of the paper funnel inserted in the end of the handle of the saucepan, we can, if we like, get a penny tin funnel, knock the narrow tube off, and have the wide funnel part soldered into the handle. This will make a stronger and more permanent instrument. The whole apparatus will cost at the outside only a few cents, and certainly the results that are to be obtained from it are very striking and astonishing.

MEASURING THE HEIGHT OF A TREE

THERE is a very simple way of measuring the height of a tree, which may be in a field or a park, and which it is impossible for us to measure by climbing or in any direct way. Suppose, for instance, that we wish to find out the height of the apple-tree, A B, in the picture. We first of all go to where the tree is standing and measure a distance of, say, 30 feet from it, in a straight line, marking the spot that is 30 feet from the tree. Then we take a stick, C D, of any convenient length—a fairly straight branch of a tree will do admirably—and stand this upright in the ground at the spot we have previously marked. Let us suppose that the stick we are using is 4 feet in height. We now walk farther away from the tree in the same straight line as when we measured off the distance of 30 feet. We go from the tree until we come to a point E, where, with our head on the ground, we see the top of the stick and the top of the tree in the same straight line—



An easy way of measuring a tree.

that is, the top of the stick just covers the highest part of the tree. We now have two imaginary triangles, as shown in the picture, and the proportion of the side C D to the side C E, in the smaller triangle C D E, is exactly the same as the proportion of the side B A to the side B E, in the larger triangle B A E. It is clear from this that every schoolboy or

schoolgirl can work out the height of the tree. Suppose that the line C E is 6 feet. We know that the stick is 4 feet high and the length B E 36 feet. From these measurements we have the simple proportion sum 6 is to 4 as 36 is to B A. We multiply 36 by 4, making 144, and divide by 6, which gives us 24 feet as the height of the tree. Church steeples, towers and other lofty buildings can, of course, be easily measured by using the same method. The chief advantage which this method of measuring a tree or building has over that described on page 1943 is that this can be done in dull as well as in sunshiny weather.

A NIGHTDRESS CASE FOR A GIRL

THERE are many materials which might be used for making a nightdress case—white linen, holland, huckaback, muslin, lace, crochet-work, canvas; in fact, so long as it is washable, durable, and dainty, a material is not far to seek. It is well to choose for embroidering it a thread whose color will not run while being washed. Suppose we choose a plain white muslin and embroider it with white floss or twisted embroidery at 5c. a skein. The muslin may be bought from 30c. a yard, but it



1. Satin stitch for snowdrop.

is advisable to get a good one which will wash well, though it may cost a few cents more. We shall want a piece of material for the lining, either pink, blue, or green, whichever color we fancy, but it should harmonize with the other colors which are used in the bedroom. A sateen may be bought at 25c. a yard with a width of 31 inches, or a colored linen would be suitable. We will make the case envelope shape, say, about 16 inches by 12 inches, and if we decide that that is a suitable size for the folded garment intended for it, we yet have to allow an addition to the width for the flap, say, five inches more. A pretty edging for the case is a strong lace, containing large holes at intervals through which can be threaded a narrow ribbon. We shall need about three yards of it for our purpose.

Having collected the materials, we cut the muslin and the lining the same size, and next have to decide on the embroidery design. As we are going to work in white, to avoid any possibility of the color running in washing, suitable designs would be snowdrops, white heather, or white harebells. It is well, in choosing a design, to consider the shape and size of the leaves. With a thin material like muslin we do not want a large leaf which will cover much of the surface and entail risk of puckering. Suppose, then, we design something for our material, and for this we cannot do better than go to Nature for an idea, and draw snowdrops, as in picture 3. Failing this, we must get a transfer pattern and use it as shown on page 1517 and elsewhere. We will work the blossoms of the snowdrop in satin stitch across the sepals downwards, and in the same way cover the little green ball from which they grow, as shown in picture 1. Now we

work the leaves. These can be done in long stem stitch, as shown on page 2139. They are simple enough to do if one keeps a blade of grass in mind.

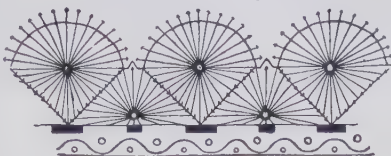
White work is always dainty, and easily soiled, so it is well to wrap it in blue tissue-paper, and to keep the part not being worked in this for protection. It should not rest on a dark tablecloth or stuff dress.

When we have finished the design, we fold the colored lining and make a case of it separately from the muslin one, taking care, however, that it fits into it nicely. We then fasten it to the muslin case at the corners on the inside. It is just as well not to sew the lining in all round, so that it can be washed apart from the case when necessary.

We can make a lace frill by passing a running stitch along the inner edge of the lace; we gather this up to the required length round the case, except at the fold, and carry it round the edge of the flap. Having stitched this on, we thread a bodkin with the colored ribbon which we are going to use, and run it in and out of the large holes in the lace, taking care to do this regularly, so that the same amount of ribbon is always visible each time on the outside, as in picture 2. Small pearl buttons and cord loops may be used to fasten the flaps down if desired.

The envelope shape is a great favorite because of its compactness and neatness, but the square is also popular, and it has the merit of being simple to make. Two squares are cut, with lining of the same size. They are joined together along two of the sides, and the other two are left open for the insertion of the garment. The upper corner is turned down and either stitched or folded over, as shown in picture 4. Such a case looks well made of coarse lace threaded with a narrow colored ribbon. The monogram can be worked on the flap, and a lace frill will finish off the case, which looks not unlike a large handkerchief sachet. A complete set—nightdress case, comb bag, and handkerchief sachet—might all be worked in the same way, with a turned-down corner, embroidered with the monogram.

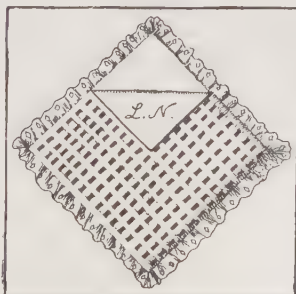
Huckaback is often used for nightdress cases. It has much to recommend it, especially the ease with which various embroidery stitches can be worked on its pattern. Canvas worked in cross stitch, is also popular.



2. Lace showing threaded ribbon.



3. Nightdress case with a snowdrop pattern.



4. Square nightdress case.

THE NEXT THINGS TO MAKE AND DO ARE ON PAGE 5517.

A GREAT ROMAN CHARIOT RACE IN THE DAYS OF "BEN HUR"



Nothing delighted the people of Rome more than to watch the exciting chariot races that took place in the great arena known as the Circus Maximus. Round and round the chariots went at a tearing pace, as seen here, and when they would collide with one another, either by accident or by the design of the drivers, the horses and charioteers being killed, or crippled for life, as was Messala when Ben Hur deliberately upset his chariot. Ben Hur carried no whip, but strove for victory by skill and strength.

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The Story of FAMOUS BOOKS

A ROMANCE OF LONG AGO

THE famous book whose story we have chosen to tell here is a work of fiction dealing with the time of Jesus, written by an eminent American soldier-author. Probably no tale of Bible times has enjoyed greater popularity than this graphic and thrilling romance of an imaginary young Jew who became a convert through the teachings of Jesus. General Lew Wallace, the author, was already well known as a distinguished soldier and a statesman, as well as a story-writer, when, in 1880, he published "Ben Hur," but the fame that book brought to him entirely eclipsed all his earlier achievements. He was fifty-three years of age when the story appeared, and few men so late in life have earned such world-wide popularity. With the exception of "Uncle Tom's Cabin," probably no novel written in recent times has been more widely read, and both are the works of American authors. General Wallace died in 1905.

BEN HUR

A TALE OF THE TIME OF JESUS

THE great city of Jerusalem and all the land of Judæa were under the heel of Rome. A Roman official, known as the procurator, administered the government on behalf of the imperial power, and, supported by the stout blades of the Roman legions, kept the people of Jerusalem in subjection.

Such was the state of affairs when, some three years before the birth of Christ, a son, named Judah, was born to Ithamar, of the house of Hur, a prince of Jerusalem, and the richest man of his time. Judah Ben Hur, though of the Jewish race, was the playmate of Messala, the son of one of the high Roman officials at Jerusalem.

The friendship between the Jewish boy and the young pagan, who was two years his senior, seemed likely to endure, and Ben Hur did not cease to cherish the memory of his playmate during the five years that Messala was away in Rome for his education as a soldier. But when the Roman youth returned to Jerusalem, he was full of hatred for the Jewish people, having been taught in Rome to despise them as an inferior and subject race.

Ben Hur realized, with sorrow, that the playmate and companion of his youth was likely to become the enemy of his manhood, for the young Jew was devoted to his own people. Ben Hur's father was now dead, but

his mother consented to his becoming a soldier, on condition that he should never fight for Rome, but devote his arms to the service of Israel and the King of the Jews, whose coming had been foretold by the prophets of old, and whom the Jewish people expected to come as a mighty conqueror.

Messala had not been long back in Jerusalem when the new procurator arrived from Rome. His name was Gratus, and his entry into the city was made the occasion of a grand procession, for the Romans rejoiced in spectacular display, especially when it conveyed to a subject people some notion of the overwhelming power and glory of Rome.

High up on the flat roof of the house of Hur the young Jewish noble stood to watch the procession pass, and, leaning over the parapet, dislodged by accident one of the heavy tiles, which fell into the road below just as Gratus was riding past, and struck him from his horse, and in the confusion that followed both Jews and Romans were ready to believe that a deliberate attempt had been made to slay the Roman official.

Though Gratus suffered but slightly from this accident, Messala denounced Ben Hur as an assassin, and without the semblance of a trial the youth was condemned to the galleys, while the palace of his fathers was

seized in the name of the emperor, and no one knew to what fate his mother and his young sister Tirzah had been sent. Under a heavy guard, and subjected to the cruellest treatment, the youth was conveyed to the sea-coast, and in the villages through which he passed there was none of his own people who would venture to brook the anger of the Roman guards by giving him food and drink, much though they pitied him. Only in passing through the little town of Nazareth did a youth, who accompanied an elderly man carrying the tools of a carpenter, come forward with quiet fearlessness to the Jewish prisoner, and, looking upon him with infinite pity, give him a drink of water before the astonished guards could interfere.

A PRINCE OF JERUSALEM AS A SLAVE IN THE GALLEYS OF ROME

A galley-slave was usually worn to death in a year or so, but Ben Hur had not abandoned the hope that he might yet live to fight for the Lord of Israel, and even in the awful depression of his new life, chained to a bench in the galley, and tugging wearily at a heavy oar, he clung to this hope. His shrewd mind told him that by changing from one side of the galley to the other he would be better able to stand the strain of the toil, and this change he contrived to effect, so that he developed the strength and muscles of a giant, and became the best oarsman in the galley.

Three years had passed in this way, and never a word of kindness had the galley-slave heard, when it chanced that the Astræa, as the galley on which he served was named, was made the chief vessel of a fleet of one hundred assembled under the great tribune Arrius, to do battle with the pirates in the Ionian Sea. The attention of Arrius had been directed to Ben Hur, who was said to be the best rower on the galley.

HOW THE GALLEY-SLAVE BECAME A RICH PRINCE AGAIN

"From thy speech thou art a Jew," said the noble tribune to him.

"My ancestors further back than the first Roman were Hebrews," was the proud answer.

"I have not been to Jerusalem," Arrius went on, "but I have heard of its princes. I knew one, a merchant who sailed the sea. He was fit to have been a king. Of what degree art thou?"

"My father was a prince of Jerusalem, and as a merchant he sailed the seas. He was known and honored in the guest-chamber of the great Augustus. His name was Ithamar, of the house of Hur."

The tribune raised his hand in astonishment, saying, "A son of Hur—thou " For it was of Ithamar he had spoken. Then Ben Hur told him what had happened, and the noble Roman heard for the first time the true story of how the youth had been condemned without a trial, and resolved to examine into his case. Meanwhile, the galley required the service of its best rower, and Ben Hur went back to his toil at bench number 60. In the battle with the pirates the Astræa was wrecked. Arrius would have drowned but for the help of Ben Hur, and out of gratitude for this service, and pity for the youth's wrongs, the tribune adopted the young Jew as his heir.

A new life opened out again for the son of Ithamar, and he now spent five years learning the art of war at Rome. Arrius died within that time, and Ben Hur became the possessor of his wealth. A great expedition was being prepared to attack the Parthians in the East, and Ben Hur took service in this so that he might experience real warfare, and be the better able to help his countrymen some day to throw off the yoke of Rome.

BEN HUR FINDS AN OLD FRIEND AT ANTIOCH, AND HAS MORE GOOD FORTUNE

It was at the great and populous city of Antioch that the forces were being assembled, and thither Ben Hur went. Here, to his surprise, he found that the greatest merchant, whose ships crowded the harbor, was one Simonides, who had been his father's steward and slave; and, according to Jewish law, all that he possessed, including his own person, was the property of the son of Ithamar.

But in the mind of Ben Hur there was no thought of asserting his power over Simonides, and he sought him out solely, to discover what had become of his mother and Tirzah. He found the merchant an aged man, broken in body, for he had been subjected to cruel torture by Gratus, when that tyrant had sought to make him disclose the sources of Ithamar's wealth. Simonides had defeated the designs of the Roman, and had employed his dead master's capital to such good purpose that he had become the richest merchant in all the world.

When convinced that Ben Hur was indeed the son of his old master, he offered to surrender everything to him, according to the Jewish law.

Ben Hur, however, resolutely refused to profit by the devotion of Simonides, and would claim no more than that portion of the merchant's wealth which had been the property of his own father; though that of itself was sufficient to make its owner one of the richest men in the East. Liberty he could not give to Simonides or his daughter Esther, for by Jewish law a slave was a slave for ever; but he determined never to assert his ownership. His joy at meeting again one who had known and faithfully served his father was shadowed by the fact that Simonides knew nothing of the fate that had befallen his mother and sister.

Now, Simonides had not at once accepted Ben Hur as his master, but had first made sure of the young man's character and the truth of his story by sending a trusted servant to take him about the crowded scenes of Antioch, and report on his behavior.

THE YOUNG JEWISH NOBLE MEETS AN ENEMY AND DECIDES TO HUMBLE HIM

During a visit to the great circus where the favorite sport of chariot racing was conducted, Ben Hur saw various charioteers practising their four-horse teams in the arena, and one of these he recognized as the haughty Messala, his old playmate and false friend. A great meeting was to be held in this vast arena in a week's time, when the chariot races would be the centre of interest. Among the various teams there was one of four beautiful Arab horses, which belonged to the Sheikh Ilderim, who was in despair because the Roman driver did not seem to know how to drive them, Arabian horses being used to gentle treatment, and Roman drivers being accustomed to the merciless use of the lash.

Later in the same day Ben Hur had an opportunity to test the giant strength of his muscles, which had been developed by his years as a galley-slave. The haughty Messala came driving his chariot through the streets regardless of the traffic, and his horses would have run down a camel that rested with its load on the roadway, and probably would have killed an old Egyptian and a

beautiful young woman seated within the covered shelter on its back, if, springing straight at the nearest horses, Ben Hur had not forced them into the centre of the road, and so avoided a collision. Only one of almost superhuman strength could have hoped to achieve such a feat without injury; but Ben Hur knew his strength was far beyond that of the ordinary man.

BALTHASAR, THE WISE MAN, TELLS BEN HUR THE STORY OF THE STAR

Perhaps it was the result of this incident that made him determined to humiliate his enemy, and so, seeking out the Sheikh Ilderim, he offered to drive his Arab horses in the chariot race. A trial run convinced the sheikh that this young man of the powerful arms knew how to manage the team, and he consented to permit Ben Hur to drive his Arab four in the great race.

It was at the house of the sheikh that Ben Hur again met the old Egyptian whose life he had saved by preventing Messala's team from running down the camel. Balthasar was his name, and he was one of three wise men, who, having heard a mysterious Voice speaking to them, and, being guided by a star, had foregathered in the desert and made a pilgrimage to Nazareth to look upon the infant Jesus. From the lips of the old man Ben Hur heard the thrilling story, and rejoiced to think that perhaps the time was at hand when the prophesied King of the Jews would arise in his might as a great hero, and lead the ancient people to glorious triumphs over their Roman oppressors.

Simonides had also heard the story of Balthasar, and was eager to devote his enormous riches to fitting out an army to support this King of the Jews when he should rally all the nation to the flag of Judah. Messala had meanwhile recognized Ben Hur, and was busily plotting to remove him from his path.

BEN HUR HAS NEWS OF HIS MOTHER AND SISTER, AND MAKES HIS PLANS

A letter addressed to Gratus by Messala had fallen into the hands of the sheikh's desert riders, and from this it seemed clear that Ben Hur's mother and sister had been imprisoned by the Roman tyrant, and were possibly still languishing in some unknown cell. Nothing could happen to Ben Hur's hurt before the race, but it was decided that as

soon as it was over he should go into hiding for a time and afterwards prosecute his search for his mother and sister. As the day of the sports came round great excitement was displayed about the chances of the Arab team, for, not content with the hope of humiliating Messala by defeating him in the race, Ben Hur employed a loyal Jew to induce the Roman to stake his entire fortune on the outcome of the great race.

THE FIERCE EXCITEMENT OF THE CHARIOT RACES IN THE CIRCUS AT ANTIOCH

In no city of the Roman world at that time, other than Rome itself, could so vast a gathering of people have been brought together as that which assembled to witness the sports at Antioch. In the great chariot race there were six contestants, and Ben Hur was the favorite, because he stood for the Jewish people and their hatred of the Romans, and there were many Jews in Antioch.

The excitement of the multitude was intense as they saw the brutal Messala deliberately direct his chariot against one of the others that appeared to be gaining on him, and upset the driver, who was borne from the arena in a dying condition. Ben Hur calmly and without a whip urged his beautiful Arabians to the gallop, seeming to pay no heed to the frantic efforts of his competitors. Steadily they drew on until it was a race between the Roman and the Jew.

In the breathless stillness of the excited multitude, the thunder of the horses' hoofs and the roll of the chariot-wheels seemed to fill the arena with that sense of hatred which rose in every Jewish breast at the thought of the Roman oppressor, when suddenly Messala, standing sideways in his chariot, brought his long whip with vicious force across the backs of Ben Hur's team.

HOW BEN HUR DEFEATED HIS HAUGHTY RIVAL IN THE GREAT RACE

A cry of indignation went up from all the Jewish spectators, and from many a Roman, too, as those beautiful Arab steeds, trained in gentleness, and never before touched with a lash, startled and terrified by the pain of the coward's blow broke wildly from their steady and sure pace. They would have become utterly unmanageable but for the giant strength which three years in the galleys had given to the muscles of Ben Hur. With more than human power, as it

seemed to the excited audience, he curbed the frantic beasts, and, bringing them once more into their steady pace, gained again on his Roman enemy.

Seven times round the great arena was the length of the race, and they were at the last turn, when Ben Hur, urging his horses to their utmost, took the outward sweep, and, coming abreast of the Roman, deftly guided his horses so that the wheel of his chariot caught the outer wheel of Messala's, upset the chariot of the Roman and threw him beneath the hoofs of his galloping horses. Crippled for life, his enemy was lifted up and carried from the scene, and Ben Hur was declared to be the winner, so that all who had wagered in favor of Messala lost their money, and he himself lost his entire fortune.

Ben Hur at once withdrew to a place of hiding until he might safely proceed to Jerusalem to search for his mother and sister. But he had little to fear from any vengeance of Gratus, as that unjust governor had now been displaced, and a new governor named Pontius Pilate ruled in his stead.

WHAT HAPPENED AT JERUSALEM UNDER THE NEW GOVERNOR

The new governor, in taking over his charge, had discovered that in a subterranean prison, attended by a dumb gaoler, were two women, who had long been kept there by Gratus, and from the terrible existence they had led had both been stricken with leprosy.

He gave orders that they should be liberated and sent to the hill outside the city, where, in the dismal caves and tombs, the lepers of Jerusalem were left to sink into death. In passing by the house of Hur, the women saw a young man sleeping at the gate, and knew him for son and brother, but hastened on so that he might rather think them dead than lepers. An old servant encountered them, however, and daily took them food.

When Ben Hur at length had news of the fate of his dear ones, every effort to discover them was vain, and, thinking them to be dead, he devoted himself to raising an army to fight for the King of the Jews when He should come.

Now, at this time, the infant whom Balthasar had journeyed to Nazareth to look upon had grown into manhood, and had been going about throughout

Judæa teaching the common people to practise gentleness and mercy, to worship God in holiness, and to believe in Him and His Son Jesus if they would be saved. The fame of His teaching had gradually spread to distant places, and although this was no princely conqueror, such as the Jews expected, there were already those who believed Jesus to be in very truth the Messiah.

Among these believers was Balthasar, whom Ben Hur met again on his way to look upon the Teacher he had worshipped as a babe. The young Jew accompanied the old man on his journey, and when he saw the Nazarene he recognized in Him the gentle face and pitying eyes that belonged to the little carpenter who gave him water to drink when the Roman guards were taking him to the galleys. Thrilled and fascinated though he was by this gentlest of teachers, he was not without a feeling of disappointment when he thought of all his preparations to raise an army that would fight with mortal weapons for the King of the Jews.

BEN HUR BECOMES A FOLLOWER OF JESUS OF NAZARETH

But from place to place he followed Jesus, observing Him closely, witnessing the miracles that He wrought, believing in Him, though still hoping that he might be called upon to fight for Him as an earthly prince, for he could not understand why the kingdom of Jesus was not of this world. So it came about that Ben Hur was one of the multitude that went up to Jerusalem with Jesus.

As they were passing the hill of the lepers two women ran down, and, throwing themselves at the feet of the Master, besought Him to make them clean. He saw Jesus bless them and tell them that their faith had made them clean, but, curious, and still a little doubting, Ben Hur lingered behind to see if it was even as the Master had said, and, behold, his mother and his sister stood before him restored to health.

It was required by the law that persons who had been cured of leprosy should tarry without the walls of Jerusalem for nine days before being allowed to return to their homes. Thus Ben Hur, who would not desert his mother and Tirzah during these nine days which they had to wait outside the city, was

not present at those world-moving scenes when the Jewish multitude, disappointed at not finding in Jesus the conquering prince of earthly power whom they had expected, had turned against the gentle teacher of humiliation and holiness. Nay, in that short time the rabble and the priests had hounded Him to death and drawn from the reluctant Pontius Pilate consent to His execution. Ben Hur would have led his carefully drilled legions to rescue Jesus, but too late he discovered that all but two of his recruits had joined in the hostile rabble.

THE LAST THAT BEN HUR SAW OF HIS LORD AND MASTER

Among the multitude that awful day when Jesus was crucified on the hill of Calvary, Ben Hur stood, in company with Simonides and Balthasar, all believers that the figure on the central cross was that of the true Messiah. So affected by the dreadful scene was Balthasar that, before the earthquake had come to strike terror through all that multitude, his spirit had taken flight to be with Him who died on the Cross.

It was not many years after this greatest event in the history of the world that Ben Hur, who had married the daughter of Simonides, determined to use his riches in the cause of Christianity, to which Simonides also consecrated his vast wealth. At Rome the infamous Emperor Nero was now at the height of his short but awful reign of persecution, and, by wholesale slaughter, he sought to reduce the growing numbers of Christians throughout his dominions.

HOW BEN HUR HELPED TO BUILD THE CATACOMBS OF ROME

But in these days of persecution the Christians clung tenaciously to their faith, and near the city of Rome we can see to this day the wonderful catacombs, or underground cities, consisting of endless tunnels and cells, and even little chapels, in which, fleeing from the wrath of the monster emperor, the Christians lived and worshipped God hidden from the light of day.

To the construction of these catacombs the fortunes of Ben Hur and Simonides were devoted, and there are no memorials of the early Christians and their devotion to the teaching of Christ more eloquent than these ancient ruins.

A STATUE OF WILLIAM CULLEN BRYANT



A few years ago New York named a park in honor of the American poet, William Cullen Bryant. The memorial has lately been completed by the erection of a statue of the poet by Mr. Herbert Adams. William Cullen Bryant wrote many beautiful poems of nature, among the best of which are "The Fringed Gentian" and "The Waterfowl," which can be found in our Book of Poetry.

The Book of POETRY

A POEM OF THE SKY

IN any selection from the great English poet, Shelley, this poem always finds a place, as it is at once characteristic of the author and presents in the most finished poetic style, with a rare wealth of imagery and pictorial truth, a simple scientific explanation of how clouds are formed. We could tell in a very few words, of course, the process of Nature which results in the formation and the dissolving of a cloud, but the poet has here chosen to show us that these simple facts can be clothed with beautiful words which invest them with some of the grandeur that a cloud in moonshine, sunrise or storm possesses.

THE CLOUD

I BRING fresh showers for the thirsting
flowers,
From the seas and the
streams ;
I bear light shade for the leaves when
laid
In their noonday dreams.
From my wings are shaken the dews
that waken
The sweet birds every one,
When rocked to rest on their mother's
breast,
As she dances about the sun.
I wield the flail of the lashing hail,
And whiten the green plains under ;
And then again I dissolve it in rain,
And laugh as I pass in thunder.

I sift the snow on the mountains below,
And their great pines groan aghast ;
And all the night 'tis my pillow white,
While I sleep in the arms of the blast.
Sublime on the towers of my skyey bowers,
Lightning, my pilot, sits ;
In a cavern under is fettered the thunder,
It struggles and howls at fits.
Over earth and ocean, with gentle motion,
This pilot is guiding me,
Lured by the love of the genii that move
In the depths of the purple sea ;
Over the rills, and the crags, and the hills,
Over the lakes and the plains,
Wherever he dream, under mountain or
stream,
The Spirit he loves remains ;
And I all the while bask in heaven's blue
smile,
Whilst he is dissolving in rains.

The sanguine sunrise, with his meteor eyes,
And his burning plumes outspread,
Leaps on the back of my sailing rack,
When the morning star shines dead.
As, on the jag of a mountain crag
Which an earthquake rocks and swings,
An eagle, alit, one moment may sit
In the light of its golden wings ;
And when sunset may breathe, from the
lit sea beneath,
Its ardours of rest and of love,
And the crimson pall of eve may fall
From the depths of heaven above,
With wings folded I rest on mine airy
nest,
As still as a brooding dove.

CONTINUED FROM 5162



That orb'd maiden, with
white fire laden,
Whom mortals call
the moon,
Glides glimmering o'er my fleece-like
floor,
By the midnight breezes strewn ;
And wherever the beat of her unseen
feet,
Which only the angels hear,
May have broken the woof of my tent's
thin roof,
The stars peep behind her and peer ;
And I laugh to see them whirl and flee,
Like a swarm of golden bees,
When I widen the rent in my wind-built
tent,
Till the calm rivers, lakes, and seas,
Like strips of the sky fallen through me on
high,
Are each paved with the moon and these.

I bind the sun's throne with a burning zone
And the moon's with a girdle of pearl ;
The volcanoes are dim, and the stars reel
and swim,
When the whirlwinds my banner unfurl.
From cape to cape with a bridge-like shape,
Over a torrent sea,
Sunbeam-proof, I hang like a roof,
The mountains its columns be.
The triumphal arch through which I march
With hurricane, fire, and snow,
When the powers of the air are chained to
my chair,
Is the million-coloured bow ;
The sphere-fire above its soft colours wove,
While the moist earth was laughing
below.

I am the daughter of earth and water,
And the nursling of the sky ;
I pass through the pores of the ocean and
shores ;
I change, but I cannot die.
For after the rain, when, with never a
stain,
The pavilion of heaven is bare,
And the winds and sunbeams, with their
convex gleams,
Build up the blue dome of air—
I silently laugh at my own cenotaph,
And out of the caverns of rain,
Like a child from the womb, like a ghost
from the tomb,
I arise and upbuild it again.

THE BETTER LAND

Although Mrs. Hemans was a somewhat sentimental poet, and inclined to dwell too much on the gloomy side of life, a good many of her pieces are likely long to endure, and none more likely than this song, which has been set to very appropriate music. The sentiment here is natural and unstrained, and, as it touches with dramatic intensity the longing of every feeling heart, it is no wonder that "The Better Land" has so long enjoyed popular favor.

I HEAR thee speak of the better land,
Thou call'st its children a happy band;
Mother! oh, where is that radiant shore?
Shall we not seek it, and weep no more?
Is it where the flower of the orange blows,
And the fire-flies glance through the myrtle boughs?

Not there; not there, my child.

Is it where the feathery palm-trees rise,
And the date grows ripe under sunny skies?
Or 'midst the green islands of glittering seas,
Where fragrant forests perfume the breeze,
And strange bright birds on their starry wings
Bear the rich hues of all glorious things?

Not there; not there, my child.

Is it far away in some region old,
Where the rivers wander o'er sands of gold?
Where the burning rays of the ruby shine,
And the diamond lights up the secret mine,
And the pearl gleams forth from the coral strand—

Is it there, sweet mother, that better land?

Not there; not there, my child.

Eye hath not seen it, my gentle boy,
Ear hath not heard its deep songs of joy;
Dreams cannot picture a world so fair,
Sorrow and death may not enter there;
Time doth not breathe on its fadeless bloom;
For beyond the clouds, and beyond the tomb,
It is there; it is there, my child.

THE KING'S PICTURE

In this poem, by an American writer named Helen B. Postwick, we have a picturesque illustration of the old saying that there is some touch of good in all things, and that, even where we least expect it, some virtue may be found.

THE king from the council chamber
Came, weary and sore of heart;
He called to Iliff, the painter,
And spoke to him thus apart:
"I'm sickened of faces ignoble,
Hypocrites, cowards, and knaves;
I shall shrink in their shrunken measure,
Chief slave in a realm of slaves.

"Paint me a true man's picture,
Gracious, and wise, and good,
Dowered with the strength of heroes
And the beauty of womanhood.
It shall hang in my inmost chamber,
That, thither when I retire,
It may fill my soul with its grandeur,
And warm it with sacred fire."

So the artist painted the picture,
And it hung in the palace hall;
Never a thing so lovely
Had garnished the stately wall.
The king, with head uncovered,
Gazed on it with rapt delight,
Till it suddenly wore strange meaning—
Baffled his questioning sight.

For the form was the supplest courtier's,
Perfect in every limb;
But the bearing was that of the henchman,
Who filled the flagons for him;

The brow was a priest's, who pondered
His parchment early and late;
The eye was the wandering minstrel's,
Who sang at the palace gate.

The lips, half sad and half mirthful,
With a fitful trembling grace,
Were the very lips of a woman
He had kissed in the market-place;
But the smile which her curves transfigured,
As a rose with its shimmer of dew,
Was the smile of the wife who loved him—
Queen Ethelyn, good and true.

Then, "Learn, O king," said the artist,
"This truth that the picture tells—
That in every form of the human
Some hint of the highest dwells;
That, scanning each living temple
For the place where the veil is thin,
We may gather by beautiful glimpses
The form of the God within."

PLANTING THE APPLE-TREE

William Cullen Bryant, the American poet, was the author of these verses, which, in all likelihood, were suggested to him by his having himself planted an apple-tree. The planting of any tree is a favorite subject for poets. It leads the mind in the most natural way to contemplate the continuous growth of the tree possibly for centuries after the hand that planted it lies still. Tree-planters are at work all over the world, however, who never give a thought to the poetic side of their occupation, yet their labors are as suggestive of romance as any we can engage in.

COME, let us plant the apple-tree,
Cleave the tough greensward with the
spade,

Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mould with kindly care,
And press it o'er them tenderly,
As, round the sleeping infant's feet,
We softly fold the cradle-sheet;
So plant we the apple-tree.

What plant we in this apple-tree?
Buds, which the breath of summer days
Shall lengthen into leafy sprays;
Boughs, where the thrush, with crimson breast,
Shall haunt and sing, and hide her nest;
We plant, upon the sunny lea,
A shadow for the noontide hour,
A shelter from the summer shower,
When we plant the apple-tree.

What plant we in this apple-tree?
Sweets for a hundred flowery springs
To load the May-wind's restless wings,
When from the orchard-row he pours
Its fragrance through our open doors;
A world of blossoms for the bee,
Flowers for the sick girl's silent room,
For the glad infant sprigs of bloom,
We plant with the apple-tree.

What plant we in this apple-tree?
Fruits that shall swell in sunny June,
And redden in the August noon,
And drop, when gentle airs come by,
That fan the blue September sky,
While children come, with cries of glee,
And seek them where the fragrant grass
Betrays their bed to those who pass,
At the foot of the apple-tree.

The fruitage of this apple-tree,
Winds, and our flag of stripe and star,
Shall bear to coasts that lie afar,
Where men shall wonder at the view,

And ask in what fair climes they grew ;
And sojourners beyond the sea
Shall think of childhood's careless day,
And long, long hours of summer play,
In the shade of the apple-tree.

Each year shall give this apple-tree
A broader flush of roseate bloom,
A deeper maze of verdurous gloom,
And loosen, when the frost clouds lower,
The crisp brown leaves in thicker shower.
The years shall come and pass, but we
Shall hear no longer, where we lie,
The summer's songs, the autumn's sigh,
In the boughs of the apple-tree.

"Who planted this old apple-tree?"
The children of that distant day
Thus to some aged man shall say ;
And, gazing on its mossy stem,
The grey-haired man shall answer them :
"A poet of the land was he,
Born in the rude but good old times ;
'Tis said he made some quaint old rhymes,
On planting the apple-tree."

RAIN IN SUMMER

Longfellow, the writer of the following poem, is one of the great prophets of cheerfulness, and here he teaches us the very necessary lesson that though a rainy day may not be quite to our liking, it may be a mercy to the farmers, and, indirectly a benefit to us as well.

HOW beautiful is the rain !

After the dust and the heat,
In the broad and fiery street,
In the narrow lane,
How beautiful is the rain !

How it clatters along the roofs,
Like the tramp of hoofs
How it gushes and struggles out
From the throat of the overflowing spout !
Across the window-pane
It pours and pours ;

And swift and wide,
With a muddy tide,
Like a river down the gutter roars
The rain, the welcome rain !
The sick man from his chamber looks
At the twisted brooks ;
He can feel the cool
Breath of each little pool ;
His fevered brain
Grows calm again,
And he breathes a blessing on the rain.

From the neighbouring school
Come the boys,
With more than their wonted noise
And commotion ;
And down the wet streets
Sail their mimic fleets,
Till the treacherous pool
Engulfs them in its whirling
And turbulent ocean.
In the country on every side,
Where far and wide,
Like a leopard's tawny and spotted hide
Stretches the plain,
To the dry grass and the drier grain
How welcome is the rain !

In the furrowed land
The toilsome and patient oxen stand ;
Lifting the yoke-encumbered head,
With their dilated nostrils spread,
They silently inhale
The clover-scented gale,

And the vapours that arise
From the well-watered and smoking soil.
For this rest in the furrow after toil
Their large and lustrous eyes
Seem to thank the Lord,
More than man's spoken word.

Near at hand,
From under the sheltering trees,
The farmer sees
His pastures and his fields of grain,
As they bend their tops
To the numberless beating drops
Of the incessant rain.
He counts it as no sin
That he sees therein
Only his own thrift and gain.

SOMEBODY'S MOTHER

We have here a familiar example of the sentimental verse which was very popular a generation ago, but is now passing out of favor. We can scarcely dignify it with the name of poetry, but, as there can be no question that its sentiment is entirely worthy, and it is expressed in simple and unaffected words, we venture to give it a place in these selections.

THE woman was old and ragged and gray,
And bent with the chill of the winter's day ;

The street was wet with a recent snow,
And the woman's feet were aged and slow.

She stood at the crossing, and waited long,
Alone, uncared for, amid the throng

Of human beings who passed her by,
Nor heeded the glance or her anxious eye.

Down the street, with laughter and shout,
Glad in the freedom of "school let out,"

Came the boys like a flock of sheep,
Hailing the snow piled white and deep.

Past the woman so old and gray
Hastened the children on their way,

Nor offered a helping hand to her—
So meek, so timid, afraid to stir

Lest the carriage wheels or the horses' feet
Should crowd her down in the slippery street.

At last came one of the merry troop—
The gayest laddie of all the group ;

He paused beside her, and whispered low,
"I'll help you across if you wish to go."

Her aged hand on his strong young arm
She placed, and so, without hurt or harm,

He guided the trembling feet along,
Proud that his own were firm and strong.

Then back again to his friends he went,
His young heart happy and well content.

"She's somebody's mother, boys, you know,
For all she's aged and poor and slow ;

"And I hope some fellow will lend a hand
To help my mother, you understand,

"If ever she's poor and old and gray,
When her own dear boy is far away."

And "somebody's mother" bowed low her head
In her home that night, and the prayer she said

Was : "God, be kind to the noble boy,
Who is somebody's son and pride and joy !"

AN INDIAN AT THE BURIAL-PLACE OF HIS FATHERS

William Cullen Bryant seeks in this fine poem to suggest the thoughts that come to a "noble red man"—as the Indian of America is sometimes, and not too truly, described—visiting the burial-place of his fathers. The red man is a picturesque figure, but he is at best a savage, and the

It is the spot I came to seek—

My father's ancient burial-place,
Ere from these vales, ashamed and weak,
Withdrew our wasted race.

It is the spot—I know it well—
Of which our old traditions tell.

For here the upland bank sends out

A ridge toward the river-side ;

I know the shaggy hills about,

The meadows smooth and wide,
The plains, that, toward the southern sky,
Fenced east and west by mountains lie.

A white man, gazing on the scene,

Would say a lovely spot was here,
And praise the lawns, so fresh and green,
Between the hills so sheer.

I like it not—I would the plain
Lay in its tall old groves again.

The sheep are on the slopes around,

The cattle in the meadows feed,
And labourers turn the crumbling ground,
Or drop the yellow seed,

And prancing steeds, in trappings gay,
Whirl the bright chariot o'er the way.

Methinks it were a nobler sight

To see these vales in woods arrayed,
Their summits in the golden light,

Their trunks in grateful shade,
And herds of deer, that bounding go
O'er rills and prostrate trees below.

And then to mark the lord of all,

The forest hero trained to wars,
Quivered and plumed, and lithe and tall,

And seamed with glorious scars,
Walk forth, amid his reign, to dare
The wolf, and grapple with the bear.

This bank, in which the dead were laid,

Was sacred when its soil was ours ;
Hither the artless Indian maid

Brought wreaths of beads and flowers,

peaceful peopling of his country by white men is a better thing than leaving it to the wild misrule of bloodthirsty tribes. The savage is an attractive creature in poetry and fiction, but the civilized man, with all his faults, does more to help the world along and promote the cause of humanity

And the grey chief and gifted seer
Worshipped the god of thunders here.

But now the wheat is green and high

On clods that hid the warrior's breast,
And scattered in the furrows lie

The weapons of his rest,

And there, in the loose sand, is thrown
Of his large arm the mouldering bone.

Ah, little thought the strong and brave,

Who bore the lifeless chieftain forth ;
Or the young wife, that weeping gave
Her first-born to the earth,

That the pale race, who waste us now,
Among their bones should guide the plough.

They waste us—ay—like April snow

In the warm noon, we shrink away ;
And fast they follow, as we go
Towards the setting day—

Till they shall fill the land, and we
Are driven into the western sea.

But I behold a fearful sign,

To which the white men's eyes are blind ;
Their race may vanish hence, like mine,
And leave no trace behind,

Save ruins o'er the region spread,
And the white stones above the dead.

Before these fields were shorn and tilled,

Full to the brim our rivers flowed ;
The melody of waters filled

The fresh and boundless wood ;
And torrents dashed, and rivulets played,
And fountains spouted in the shade.

Those grateful sounds are heard no more,

The springs are silent in the sun,
The rivers by the blackened shore,

With lessening current run ;
The realm our tribes are crushed to get
May be a barren desert yet.

* THE FLIGHT OF YOUTH

Nothing that the American poet, R. H. Stoddard, has written is more certain of remembrance than these beautiful lines. There is a glorious sense of life that comes to us all in our youth and makes us feel that life is immortal. As age creeps on this feeling wears away, and that is why the wise men say "If Youth but knew!" meaning that if youth had also the wisdom of age, little would be impossible.

THERE are gains for all our losses,

There are balms for all our pains ;

But when youth, the dream, departs,

It takes something from our hearts,
And it never comes again

We are stronger, and are better,

Under manhood's sterner reign ;

Still, we feel that something sweet

Followed youth, with flying feet,

And will never come again.

Something beautiful is vanished,

And we sigh for it in vain ;

We behold it everywhere,

On the earth, and in the air,

But it never comes again.

QUIET WORK

These verses, by Matthew Arnold, take the form of a sonnet, or a little poem of fourteen lines, in which the reader will notice that the last six lines are not merely a continuation of the first eight, but they also contain a change of thought, which is proper to this form of verse.

ONE lesson, Nature, let me learn of thee,

One lesson which in every wind is blown ;

One lesson of two duties kept at one

Though the loud world proclaim their enmity—

Of toil unsevered from tranquillity !

Of labour, that in lasting fruit outgrows

Far noisier schemes, accomplished in repose,

Too great for haste, too high for rivalry !

Yes, while on earth a thousand discords ring,

Man's fitful uproar mingling with his toil,

Still do thy sleepless ministers move on,

Their glorious tasks in silence perfecting ;

Still working, blaming still our vain turmoil,

Labourers that shall not fail, when man is
gone.

* From "Poems of Richard Henry Stoddard," copyright, 1880, by Charles Scribner's Sons.

THE APPLE WINDS

These charming verses, by Mr. Will H. Ogilvie, convey a lesson worth remembering, for in our care-free days of youth we are apt to welcome the winds that blow us good without thought of those to whom they may blow ill. The verses are printed with Mr. Ogilvie's permission.

I HAD no thought of stormy sky
In days when I was small,
And all the world was bounded by
Our ten-foot garden wall.
I never thought the storm-winds came
From wrecks and ribboned sails;
I never knew them by their name
Of equinoctial gales;
But sweeping round the orchard bends,
Knee-deep in leaves of brown,
I only knew them as the friends
That shook the apples down!
And I have travelled far and far
And weary miles since then,
And battled where the storm-winds are
That wreck the lives of men;
And back among the lime-tree leaves,
Grown gold before they fall,
I hear the song that autumn weaves
When first the wild winds call;
And though their hand is chill and cold,
Their face has winter's frown,
I know them for the friends of old
That shook the apples down!

I THINK WHEN I READ

Few children's hymns are better known or more often heard in Sunday schools than this beautiful hymn by Mrs. Luke.

I THINK when I read that sweet story of old,
When Jesus was here among men,
How He called little children as lambs to His fold—
I should like to have been with Him then.
I wish that His hands had been placed on my head,
That His arms had been thrown around me,
And that I might have seen His kind look
when He said:
"Let the little ones come unto Me."
Yet still to His footstool in prayer I may go,
And ask for a share in His love;
And if I thus earnestly seek Him below,
I shall see Him and hear Him above,
In that beautiful place He has gone to prepare
For all that are washed and forgiven;
And many dear children are gathering there,
"For of such is the kingdom of heaven."

SAD VENTURES

This poetic fancy, which appeared in an American newspaper, tells very prettily the triumph of faith; for without faith in the goodness and mercy of God, many other virtues will not help us greatly. That, at least, is the message of this little poem taken from the pages of a newspaper.

I STOOD and watched my ships go out,
Each, one by one, unmooring, free,
What time the quiet harbour filled
With flood-tide from the sea.
The first that sailed, her name was Joy;
She spread a smooth, white, shining sail,
And eastward drove with bending spars
Before the sighing gale.
Another sailed, her name was Hope;
No cargo in her hold she bore;
Thinking to find in western lands
Of merchandise a store.
The next that sailed, her name was Love;
She showed a red flag at her mast—

A flag as red as blood she showed,
And she sped south right fast.

The last that sailed, her name was Faith;
Slowly she took her passage forth,
Tacked and lay to; at last she steered
A straight course for the north.

My gallant ships, they sailed away
Over the shimmering summer sea;
I stood at watch for many a day—
But one came back to me.

For Joy was caught by pirate Pain;
Hope ran upon a hidden reef,
And Love took fire and foundered fast
In whelming seas of grief.

Faith came at last, storm-beat and torn—
She recompensed me all my loss;
For, as a cargo safe, she brought
A crown linked to a cross.

LIFE

Mrs. Barbauld, who was a well-known writer in her day, was the author of these thoughtful lines, in which there is expressed the quiet beauty of a contented and hopeful spirit.

LIFE! I know not what thou art,
But know that thou and I must part;
And when, or how, or where we met
I own to me's a secret yet.

Life! We have been long together,
Through pleasant and through cloudy weather.
'Tis hard to part where friends are dear,
Perhaps 'twill cost a sigh, a tear.
Then steal away, give little warning;
Choose thine own time;
Say not Good-night, but in some brighter
clime
Bid me Good-morning.

GOD SAVE THE KING

England's anthem is not the highest form of poetry, if we look at it entirely from the standpoint of literature. Many patriotic Englishmen object to the second verse, as ordinarily printed, and declare that it is unworthy of a great nation. Many attempts have been made to improve it, and we give here a new second verse that is sometimes sung by those who do not care to sing the second verse of the original, which some of our English friends say should not be printed in The Book of Knowledge. We give the first and third verses, followed by the suggested second verse. The anthem has probably grown from an old rebel song, and is believed to have been set to music, oddly enough, by John Bull, a musician and poet, who was organist to King James I., and who died in 1628.

GOD save our gracious King,
Long live our noble King,
God save the King!
Send him victorious,
Happy and glorious,
Long to reign over us,
God save the King!

Thy choicest gifts in store
On him be pleased to pour,
Long may he reign.
May he defend our laws,
And ever give us cause,
To sing with heart and voice,
God save the King!

SUGGESTED SECOND VERSE BY LORD NORTON

O God, our cry for peace,
And prayer that war may cease,
Do Thou, Lord, hear!
Then shall we Thee adore,
And praise Thee evermore,
Singing with heart and voice,
God save the King!

LITTLE VERSES FOR VERY LITTLE PEOPLE

THERE was a frog lived in a well,
Kitty alone, Kitty alone ;
There was a frog lived in a well,
Kitty alone and I.

There was a frog lived in a well,
And a gay mouse in a mill.
Cock me cary, Kitty alone,
Kitty alone and I.

The frog he would a-wooing ride ;
Kitty alone, Kitty alone ;
The frog he would a-wooing ride,
And on a snail he got astride.
Cock me cary, Kitty alone.

He rode till he came to My Lady Mouse
Hall,
Kitty alone, Kitty alone ;
He rode till he came to My Lady Mouse
Hall,
And there he did both knock and call.
Cock me cary, Kitty alone.

Quoth he, " Miss Mouse, I'm come to
thee,"
Kitty alone, Kitty alone ;
Quoth he, " Miss Mouse, I'm come to
thee,
To see if thou canst fancy me."
Cock me cary, Kitty alone.

Quoth she, " Answer I'll give you none,"
Kitty alone, Kitty alone ;

Quoth she, " Answer I'll give you none,
Until my Uncle Rat comes home."
Cock me cary, Kitty alone.

And when her Uncle Rat came home,
Kitty alone, Kitty alone ;
And when her Uncle Rat came home,
" Who's been here since I've been
gone ? "
Cock me cary, Kitty alone.

" Sir, there's been a worthy gentleman,"
Kitty alone, Kitty alone ;
" Sir, there's been a worthy gentleman,
That's been here since you've been gone."
Cock me cary, Kitty alone.

The frog he came whistling through the
brook,
Kitty alone, Kitty alone ;
The frog he came whistling through the
brook,
And there he met with a dainty duck.
Cock me cary, Kitty alone.

This duck she swallowed him up with a
cluck,
Kitty alone, Kitty alone ;
This duck she swallowed him up with a
cluck,

So there's an end of my history book.
Cock me cary, Kitty alone,
Kitty alone and I.

JACK AND JILL

Jack and Jill went up the hill To fetch a pail of wa - ter ;

Jack fell down and broke his crown, And Jill came tum-bling aft - er.

SIMPLE SIMON MET A PIEMAN

SIMPLE SIMON met a pieman

Going to the fair ;

Says Simple Simon to the pieman :

"Let me taste your ware."

Says the pieman unto Simon :

"First give me your penny !"

Says Simple Simon to the pieman :



"Indeed, I have not any."

He went to catch a dicky bird,
And thought he would not fail,

Because he had a little salt

To put upon his tail.

He went to ride a spotted cow

That had a little calf;



She threw him down upon the ground,

Which made the people laugh.

Then Simple Simon went a-hunting

For to catch a hare ;

He rode a goat about the street,

But could not find one there.

Simple Simon went to town

To buy a piece of meat ;



He tied it to his horse's tail
To keep it clean and sweet.

Simple Simon went a-fishing

For to catch a whale,

And all the water he had got

Was in his mother's pail.



He went to take a bird's nest—

'Twas built upon a bough ;

A branch gave way, and Simon fell

Into a dirty slough.

He went to shoot a wild duck,

But the wild duck flew away ;

Says Simon : " I



can't hit him
Because he will not stay."

Once Simon made a great snowball,

And brought it in to roast ;

He laid it down upon the fire,

And soon the ball was lost.

He went to slide upon the ice,

Before the ice would bear ;

Then he plunged in above his knees,

Which made poor Simon stare.



Simple Simon went to look

If plums grew on a thistle ;

He pricked his finger very much,

Which made poor Simon whistle.



He washed himself with blacking ball,

Because he had no soap ;

And then said to his mother :

" I'm a beauty now, I hope."



He went for water in a sieve,
But soon it all ran through.

And now poor Simple Simon

Bids you all adieu.



THE WONDERFUL BATHS OF CARACALLA



The Romans, in the days of their wealth and luxury, spent much time at the public baths; and of all the magnificent buildings devoted to bathing, the baths of Caracalla, shown here, were the most wonderful. Sixteen hundred people could bathe at one time, and the building measured nearly a mile round. The ruins are impressive, and one writer has said that there is nothing in the world so grand as the ruins of these baths.



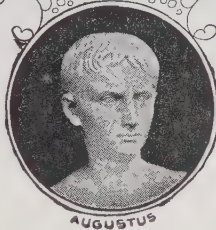
The Capitol, the great national centre at Rome, as it appeared when the Romans ruled the world.

THE GRANDEUR THAT WAS ROME

IN our journeys together through the countries of the Old World, we have often touched upon the prowess of Rome. We have seen her bring to an end the ancient stories of Greece, Persia, and Egypt, and then give shape, as it were, to the beginning of most of the countries of modern Europe. We remember the grand ruins still standing in various countries, which show how magnificent were the buildings, how skilful the engineering of the Romans; and in all the countries where they settled, enough of their treasures have been dug up and collected for study to bring us face to face with their owners. Besides this, many of their books have been handed down to us, and their language, their laws, and their customs are still influencing our world to-day.

For the beginnings of the story of the strong people who have thus linked the past with the present, we turn once more to the great steppe land which leads into the heart of Asia, whence poured out the migrations of Aryan peoples seeking new homes in the West. We read in the story of Greece, beginning on page 5199, how the tribes of the Hellenes

CONTINUED FROM 5209



AUGUSTUS

swarmed into the peninsula that we now call Greece. Other tribes of near kindred to the Hellenes journeyed, probably by land across the passes of the snowy Alps, to the boot-shaped peninsula now known as Italy. By degrees various branches of the tribes, with their families and their herds of cattle, spread down the long peninsula. Some settled on the wooded heights of the Apennines, where the air blows so keenly and the gorges are so clear-cut by the dashing streams hurrying to the plains below. Other tribes preferred those plains where the fields were very fertile. The Umbrians found a resting-place round the head of the lovely Adriatic; the Latins pushed on south of the yellow Tiber.

To the north of the Tiber there settled quite early along the west coast a vigorous, intelligent people of different race from the rest of the Italian tribes, called by us the Etruscans. Possibly these Etruscans were connected with the Hellenes, or Greeks. Some students think they came from Asia Minor, but nothing certain is yet known of their origin. Among the remains from Greece and

Rome in the great museums are many from Etruria, chiefly from the tombs that have interesting wall-paintings. The red and black vases are thought to be copied from those of Greece. We have not learned to read the language of their inscriptions. When these Etruscans are first heard of, they were far in advance of their Italian neighbors, making roads and canals, and building immense walls and towers for defence.

We do not know for certain when the Latins began to give up living in small villages consisting of groups of huts, which was the way of living of all the Italian tribes in the earliest days. By degrees they came to fortify a hill-top by building a wall, which made a safe refuge for a meeting-place. Finally, independent cities grew up, and often there was warfare with neighbors.

About fourteen miles from the mouth of the Tiber is a group of seven hills, one of which was thus chosen as a place of refuge. It became a city-state and was named Rome.

It has been said that the whole history of the world depended on the position of this group of hills. They are close together, and are near the sea. They are situated in the middle of Italy, and in the middle of Europe as it was known in ancient times, and also near the middle of the Mediterranean Sea, once the world's great, busy highway.

HOW THE BEGINNING OF ROME IS LOST IN THE MISTS OF THE PAST

We do not know when the foundation of Rome took place; some say 753 years before Christ, at the time when the "sons of Asshur" were so powerful in Assyria, and Egypt had already passed its greatest glory. The later Romans reckoned their years from the date of the founding of the city, as we do ours from the birth of Christ. In all countries it is very difficult to say when the old legends of beginnings end and the certain facts of history begin.

A race like the Romans, who rose to such immense power, naturally liked to feed their national pride by believing they were descended from gods and heroes; wonderful legends arose about their origin, and in process of time these were so grandly told by poets and historians that the world refuses even now to give up the attractive beliefs of long centuries. We are led very willingly

back again to the siege of Troy, which scholars now place earlier than a thousand years before the birth of Christ, and watch its bitter ending for Priam and his family and friends. Æneas, whose father was Anchises, one of the Trojan heroes, and whose mother was the goddess of love and beauty, escaped, the legend tells us, from the dreadful slaughter, carrying his old father on his back.

After many thrilling adventures in the Mediterranean, including a visit to the Phœnician colony of Carthage, in which his goddess mother gave him much help, Æneas found his way to the west coast of Italy, where he married the daughter of Latinus, the king of the country, and peaceably succeeded him as king of the Latins.

THE STRANGE STORY OF ROMULUS, THE FOUNDER OF ROME, AND THE WOLF

Many generations after, one of the daughters of the royal house had twin sons. Their father was the god of war. They grew up to strong manhood in spite of efforts to destroy them by casting them out upon the Tiber. A she-wolf nursed the boys till a shepherd found them and brought them up. They were named Romulus and Remus. Romulus succeeded in founding a colony and city on one of the group of seven hills near the mouth of the Tiber. This was the famous Palatine Hill, and this was the beginning of Rome.

The old stories give wonderful details of how the first Romans obtained their wives from the Sabine people living on another hill of the group, called later the Quirinal Hill, by running away with them at a joint festival. However this may be, the fact remains that one by one the seven hills were absorbed into one great walled city, made up of hills and valleys, green fields as well as dwelling-houses, with a fort on the Capitoline Hill. The Romans ever welcomed strangers to live within their safe enclosure, and traded with their neighbors round; they also fought continually with these neighbors, especially with the Etruscans, who, besides being foes, were the teachers of the Romans.

THE WALLS OF ROME, WHICH ENCLOSED A STATE AS WELL AS A CITY

Many and interesting are the glimpses given us of Rome in its cradle, in the story of the rule of the kings who succeeded Romulus, during a period of about 250

years. We see the sober, hard-working peasants, developing by their patient toil qualities that made their race the best soldiers in the world. Marvelous were the great works of the kings, such as the city walls, which enclosed a state as well as a city, and the great sewers by which the marshes at the foot of the hills were drained, some of the arches of which were high enough for loaded hay-carts to pass beneath them. There was the fine Circus Maximus in one of the valleys, for games and races; and the picturesque stalls of the workers at various trades were set up round the market-place, or Forum, in another valley. Fine, too, were the temples rising up near the Forum and on the hill above, a faint shadow, as it were, of the glories that came afterwards.

But the people grew to hate the rule of the kings, some of whom, many think, were Etruscan rulers, and at last they were driven out, and a republic set up about 500 years before Christ. The chief officers of the republic were the consuls, and there was a council called the senate.

Lord Macaulay, in the "Lays of Ancient Rome," which we read on page 1403, gives vivid pictures of these old times when Rome, the youngest of the Latin states, was developing the character and strength by which she was able not only to rise to their headship, but to pass on to the conquest of the world.

HOW THE RULE OF THE FATHERS BECAME THE RULE OF THE NOBLES

The simple family life, the hard-working peasants, the well-trained soldiers, the stern obedience to law, were some of the factors that led on to success. At first the state was made up of a number of families, each ruled by the fathers, or heads, called the *patres*. The king presided over the council formed by these *patres*, who became the *patricians*, or nobility. The new people who crowded into Rome for trade or shelter were called by the *patres*, who looked down on them, the *plebes*, or crowd. Thus began a government by nobles, the patricians, over numbers of people below them in wealth and position, the plebeians.

These plebeians had no share in the government, no voice or vote in settling public affairs. The patricians became more and more unfair and unkind to the plebeians as time went on, till at last the plebeians would no longer endure their oppression, and Rome, torn in pieces

at home, was unable to push conquests abroad for a long while. But the Roman people gained so much training in the long struggle, in the way of obedience, self-control, and perseverance, and in wisdom as to what was best for the general life of all, that they became thoroughly fitted in the course of years not only to conquer the world, but to govern it as well.

THE STRUGGLE OF THE ROMAN PEOPLE FOR THE RIGHT TO MAKE THEIR LAWS

After a time as we have seen the kingdom became a republic, but the difficulties of settling the new republic were great and prolonged. The plebeians slowly gained their rights, not by riots or bloodshed, but by obeying the laws, however much they disliked them, and by patiently striving for one step at a time. They got their own magistrates, who were called tribunes, and the privilege of owning land, and at last they helped to make the laws they had to obey, and gained the right to hold the highest offices in the State. Two stories stand out prominently in the history of the small wars that went on from time to time with the tribes around during the struggles of the plebeians against the patricians.

One is that of Coriolanus, the brave man who, shut in alone in the enemy's city, yet managed to take it. Afterwards, the story says, he was exiled by his countrymen, and went over to the enemy, even leading their army against Rome. In vain did the senators and priests plead with him. It was only when his wife and mother begged him to spare Rome that he gave in, and led his army back.

Then the story of Cincinnatus shows us how simple the old customs of Rome were, and how all citizens served the State. We see the curly-haired Cincinnatus at work ploughing on his farm, when messengers come to ask him to get the consul and his army out of a difficulty. Cincinnatus called for his cloak, and went at once, and succeeded in doing what was wanted. He then returned home to his farming.

THE FIERCE GAULS WHO DROVE THE ROMANS IN TERROR FROM THEIR CITY

All the time when there were little wars such as these in which the stories of Coriolanus and Cincinnatus shine out, Rome had always in her mind her old enemies, the Etruscans. These were

wealthy traders. But the time came when their power began to decline. The Greeks won a great sea victory over them, and then came the Gauls, who were settled all over the northern parts of Italy. These attacked the Etruscans on land, and the Romans attacked them from the south.

In the year 309 before Christ, the tall and terrible Gauls, with their fair hair and flashing eyes, came down upon Rome itself, as we read on page 576, after defeating a Roman army of 40,000 men. We are told that "their harsh music and discordant clamors filled all places with a horrible din," and their long swords cut through the helmets of the Romans, making them flee in terror and panic.

No one thought of defending the walls of the city; the Capitol fortress on the Capitoline Hill alone held out, as we read in the story of the Sacred Geese, on page 576, and the white-bearded priests sat like statues in the Forum of the deserted city. The Gauls killed the priests, set fire to the city, demanded a heavy ransom, and departed. In this fire the city records perished, and with them all that would have given us actual facts about the thrilling story of the past.

HOW THE ROMANS LEARNED TO FIGHT AGAINST ELEPHANTS AND WON ITALY

The Romans learned much from their war with the Gauls, and steadily pursued their conquests over the rest of the states of the peninsula. They conquered the brave Samnites and the Etruscans, they had long wars with the Greek cities in the South. One of these was Tarentum. The people were one day sitting in an open-air theatre, like the one in Athens, listening to one of the splendid Greek plays; when they looked up, they saw the Roman ships sailing close to their harbor. So the war began, and they asked Pyrrhus of Greece to help them. It took the Romans five years to win.

As the war went on they learned some useful lessons, such as how to fight against elephants and how to improve their cavalry. When Pyrrhus had gone home, in the year 274 before Christ, after losing nearly all his troops, all the peninsula of Italy had passed to Rome. The splendid Greek cities of the South furnished beautiful works of art, and many articles of luxury hitherto almost unknown to the victors.

We see in the story of modern Italy, that begins on page 3073, how difficult the

long, narrow country has always been to govern from one centre. The Romans had two plans by which to hold their conquests, and with these we are already familiar, because they were the same as were used in Britain. Colonies were founded, in which Roman citizens, who never forgot Rome, were sent to live and work, and teach others to do the same. Also fine roads were made to connect the colonies and the camps of the soldiers with the capital, so that troops could travel quickly along these roads and trade routes could be established.

A NAVY THAT WAS COPIED FROM A WRECK, AND SAILORS WHO ROWED IN SAND

Soon after Pyrrhus had returned home, the tremendous wars between Rome and Carthage began. We read on page 5200, in the story of Greece, that Carthage was a colony of Phœnicia, and these wars are generally called the Punic, or Phœnician, wars. The western half of the north coast of Africa had been conquered by the Carthaginians, but the natives had not been well treated by them; so when they had to serve in the armies of their conquerors, they had none of the enthusiasm for their cause which the Roman soldiers had for theirs—they cared only for their pay.

The war began in Sicily, the lovely island midway between Rome and Carthage, and the Romans soon found that they must have a navy. With great courage and energy they set to work to build ships, taking a stranded Carthaginian vessel as a model. While the sawing and hammering were going on, crews were in training, sitting on benches on the shore, practising rowing in the sand.

Great was the enthusiasm in Rome when the first naval hero returned after the first sea victory, which was gained at Mylæ, in the year 260 before Christ. But there were many ups and downs in the campaign. The great Roman fleet which was afterwards built defeated the enemy and carried to Africa an army which, under Regulus, had much success, till the splendid cavalry and the huge elephants of the Carthaginians turned the tide of war once more. We read the story of the bravery of Regulus elsewhere.

THE DELIGHT OF THE PEOPLE WHEN ELEPHANTS FIRST WENT TO ROME

In a later fight, 120 of the "huge, earth-shaking beasts" were taken and sent to Rome, to the great delight of the

ENEMIES OF ROME IN VICTORY AND DEFEAT



Crossing the Alps amid the greatest difficulties, Hannibal, the famous Carthaginian general, defeated the Romans again and again, sweeping everything before him. After the battle of Cannæ, when he annihilated a Roman army, if his countrymen had sent him fresh supplies, he would probably have destroyed Rome for ever. But the reinforcements never came, and later Hannibal was recalled to Africa, where he was defeated by the Romans. In this picture we see Hannibal's army crossing the River Rhone, on its march into Italy.



The Goths, who had been driven from their old homes between the Black and the Baltic Seas by the Huns, entered the Roman Empire for protection about the year 375. They were incorporated in the empire, but later rebelled against the emperor, and electing Alaric, one of their officers, king, entered Italy and three times besieged Rome. Twice the senate bribed them to retire, but the third time they took the city and, in the year 408, plundered it, and committed many excesses. Here we see the Goths entering Rome.

people, who had never seen elephants before. After twenty-three years of fighting, the first Punic war came to an end, and peace was made by that most gallant general and wise man, Hamilcar, who was able to see when it was time to give in. Sicily was made a Roman province, and Sardinia and Corsica also became provinces a few years later.

Hamilcar had a son who was a great general, too. This was Hannibal. We are told that he worked day and night, and thought only of sleep when there remained nothing else that could be done.

HANNIBAL'S TERRIBLE MARCH ACROSS THE ALPS

After a useful campaign in Spain, where his father had been successful in forming a province for the Carthaginians he made one of the great marches of history. Leading his army of 50,000 foot soldiers and 10,000 horsemen, with numbers of elephants, he passed northward along the east coast of Spain, by the eastern "gate" of the Pyrenees, round the Gulf of Lions, across the swift Rhone, and then over the Alps themselves to the plains of North Italy. So rapid was his march that at every spot where the Romans had hoped to stop him they always arrived too late.

It is a pitiful thing to remember the lives that were sacrificed on the slippery, icy paths and the steep mountain-sides of the Alps. The cold was intense, and the people of the country rolled down great boulders on them, and attacked them from behind, just as the Swiss treated the Austrians many centuries later.

Before long all the valley of the Po was conquered by Hannibal, and he marched triumphantly down the peninsula, through Etruria, taking the Romans by surprise in the mist of the morning on Lake Trasimene. A great attempt to get rid of Hannibal was made the next year at Cannæ, where all the best Roman soldiers were killed.

THE DESTRUCTION OF CARTHAGE AND THE CONQUEST OF GREECE

But the Romans, as usual, learned much from defeat. Though they had lost great battles, they skilfully wore out the strength of the enemy in small engagements and then patiently waited, until at last the great Scipio drove the Carthaginians out of Spain, and defeated them in Africa, so that they had to send for Hannibal to come home. In the year 202 before Christ, Scipio destroyed, at

Zama, near Carthage, the army that had harassed Italy for sixteen years.

Rome was now the chief state in the West, and was supreme, owing to her ships, in the Mediterranean. The time had now come to turn her face eastwards. There had been a conflict with Macedonia during the second Punic war, and when that mighty struggle was finished, the Roman legion and the Macedonian phalanx—light troops, and the solid body of bronze-clad warriors—met in Thessaly. The legions were successful, and passed on, after a time, to set foot in Asia, where they won a tremendous victory at Magnesia under the brother of the great Scipio, who had, after his successes in Africa, been given the name of Africanus. A terrible battle at Pydna, in Macedonia, settled the fate of the country in the year 168 before Christ.

In the same year Rome found an excuse to destroy Carthage, because it had not kept strictly to the hard terms of the peace made at the end of the second Punic war. The story—one of the saddest in history—is related by an eyewitness. The innocent people were totally destroyed, and the city was completely levelled with the ground.

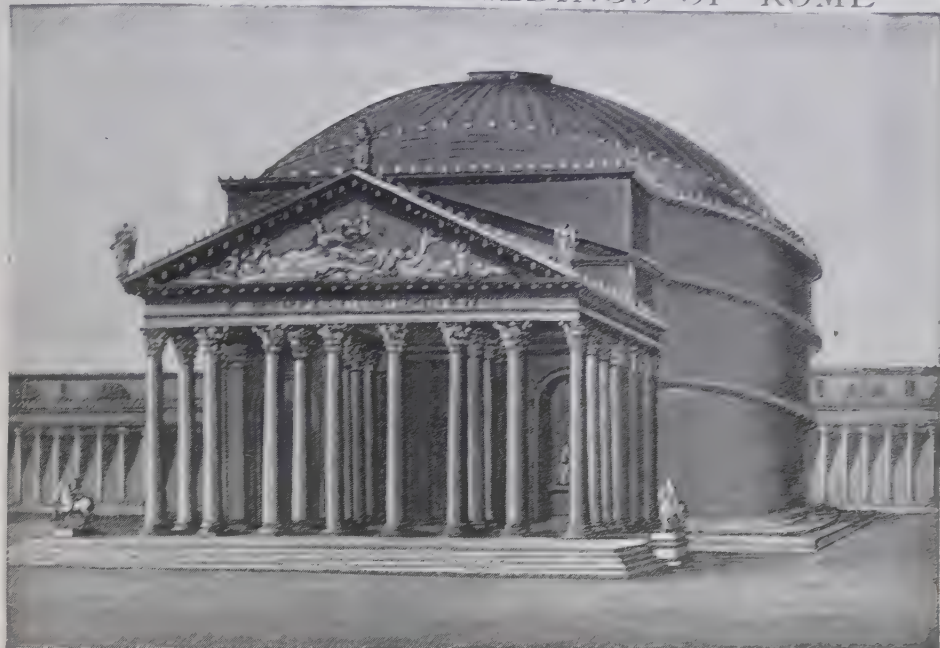
THE CITY ON THE SEVEN HILLS THAT HELD SWAY IN EAST AND WEST

Among the Roman remains in the British Museum are shown some beautiful tessellated pavements from Carthage, once pressed by the feet of its prosperous citizens. One can easily imagine that he hears the patter of the children's light, dancing steps, as well as the slow, heavy tread of the aged, in the days when Carthage was great and gay. After the days of horror, the earth covered up these pavements in deep silence for centuries.

Spain was only conquered by most determined efforts. When at last success came to the Romans, the Mediterranean Sea had become a Roman lake, for Egypt alone still remained independent under the successors of Alexander. From Mount Taurus, in Asia Minor, to the Pillars of Hercules, the city on the seven hills now held sway.

But in the gaining of all this world-power the soul of the victors was sadly lost. No longer were they the simple, dignified people of old days. Riches increased so that luxury killed their finest qualities, and made them grasping and cruel. Slaves, ill-treated and mutinous,

THE GIGANTIC BUILDINGS OF ROME



The Pantheon, shown here as it appeared in the days of Rome's grandeur, is the best preserved of all her wonderful buildings that have lasted to the present day. Built as a temple to all the gods, 27 years before the birth of Christ, it has been for about thirteen centuries a Christian church, and is still one of the most perfect buildings in the world from an artistic standpoint. Raphael and other great artists lie buried here.



For 400 years the Coliseum was the scene of the cruellest spectacles the world has ever witnessed. Here 87,000 spectators watched the death-struggles of gladiators, the fierce fighting of hundreds of animals, and the martyrdom of Christians. Sometimes the arena was flooded and mimic sea-fights took place. During the Middle Ages much of the masonry was removed, and now the Coliseum is the most impressive of ruins.

filled the place of the sturdy peasants whose bones now whitened the distant battlefields. So farming came to be neglected as the land passed from the care of free men into large estates, owned by rich nobles living in towns. And these estates were often worked by slaves chained together in gangs.

Many of the best men in Rome saw the dangers that were falling on their country. One of these was Cato, who hated the new luxury and much of the Greek influence that had affected the religion of the country. Ever since the days when the Romans had warred with the Greek colonies in Italy, they had been learning to take an interest in Greek books, pictures, and statues, and some of the new things they learned did not tend to keep up the old rough strength.

Another danger to the Roman state was the way in which the government had changed. Hardly had the old differences between the patricians and plebeians been settled than new difficulties arose. The chief offices of state came to be held almost entirely by a few rich families, and these made up the senate which governed Rome.

THE WORTHLESS MOB THAT CAME TO ROME TO SEE THE CRUEL GAMES

The senate, to get its own way, allowed the rich traders to be as oppressive as they pleased in gathering the taxes in the provinces, and the common people were kept quiet and contented by bribes of food and great entertainments in the circus. These entertainments led to terrible cruelties to men and beasts, as the taste of the populace became more and more lowered. It was their great delight to see lions and tigers hunted, also the feats of men called gladiators, who were trained to attack all kinds of animals and to fight each other to the death.

These games, and the gifts of free food, drew together in Rome a great mob of idle and worthless people, quite unfit to take any useful part in the great empire that was governed by their city.

There was much oppression, too, in Italy itself and in the distant provinces, and bribery and unfairness of all kinds prevailed everywhere. A noble pair of brothers called the Gracchi—we read the touching story of their proud mother, Cornelia, on page 2668—strove hard to reform some of the evils, especially with regard to the land, so that poor people

might be able to get small farms again; and in other ways they tried to take power out of the hands of the nobles, and improve the condition of the poor.

HOW BAD GOVERNMENT SHOOK THE VERY FOUNDATIONS OF ROME

But the misgovernment went on, and it became difficult to keep the enormous number of slaves in order. The army, too, so often flushed with success, became ever a more and more dangerous force in the state. For no longer were the Roman soldiers citizens like Cincinnatus, who fought only when their country needed them. When war became so constant, the army became a trade, which had a bad effect all round.

When Rome had conquered practically all the civilized peoples of the world, those who lived together in states and cities, and made and obeyed laws, she turned to the various uncivilized tribes who lived in a wild way on the outskirts of her empire, and who only united in the face of a great common danger.

Marius, a powerful and brilliant general who had risen from the ranks, defeated two great tribes—the barbarian Teutons and the Cimbri—who had entered Gaul west of the Alps. He succeeded in making himself chief consul for many years. Many troubles fell on Rome at this time—troubles in Italy, in the East, in Greece, and, worst of all, in Rome itself. We have the extraordinary spectacle of Rome being taken by part of her own army, under Sulla, a great enemy of Marius, so keen and bitter were the quarrels which led to ruinous civil wars.

In this first century before Christ, Rome was rich in great men. One was Cicero, who had wonderful power in speaking to men and in moving them. Many of his speeches have come down to us, and through them we learn much that is interesting about those troublous times.

THE TIME OF JULIUS CÆSAR, ONE OF THE WORLD'S GREATEST MEN

Another great man was Pompey, who cleared the Mediterranean of pirates, settled difficulties in Asia, and had much power in Rome itself. Another was Julius Cæsar, one of the greatest men in all history, great as a general, great as a statesman, and great as a writer. In the year 60 before Christ he became consul with Pompey and Crassus, and

SUNLIGHT FALLING IN THE PANTHEON



THE PANIHEON, THE OLDEST PERFECT BUILDING IN THE WORLD, OPEN TO THE SUN.
The Pantheon, completed in the 2nd century, perhaps the best-preserved building of antiquity, is lighted by an opening, 30 feet across, in the dome, through which sunshine and rain have poured for 1,800 years.

succeeded in getting the governorship of Gaul. In his "Commentaries on the Gallic War" he has left us an account of his expeditions and of the hard work by which he conquered all the land north of the Pyrenees and west of the Rhine. He gives an account of the south of Great Britain, which he visited twice. Gaul he bound firmly to Rome, by treating the conquered people kindly after they were thoroughly beaten, by introducing Roman ideas and customs, by making roads, and by starting buildings.

"VENI, VIDI, VICI," CÆSAR'S FAMOUS LETTER IN THREE WORDS

When at last he felt he could leave his province safely, and had also made himself known as a successful general and the "beloved of his soldiers," he was ready to carry out the plans he had made to change the government of Rome.

Crassus had been killed in battle against the Parthians, and then Pompey and Cæsar became rivals for the chief power. When the senate refused to do as Cæsar wished, he came from Gaul with his army and crossed the little river Rubicon, the boundary line of Gaul, into Italy, to fight for his cause. Pompey and the senate and the consuls all sailed away to Greece, and in sixty days Cæsar had gained all Italy.

A great battle was fought between the two generals at Pharsalia, in Greece, the next year, and Cæsar won.

For the next few years he had no rest, going from Egypt to Asia, whence he wrote his famous letter in three words, "veni, vidi, vici"—meaning "I came, I saw, I conquered"—from Asia to Rome, then to Africa, thence to Spain. In the year 45 before Christ he returned to Rome, master of the Roman world.

HOW THE MASTER OF THE WORLD WAS STRUCK DOWN BY HIS FRIENDS

Cæsar was assassinated in the senate house the next year by his old friends, who thought it their duty to prevent Rome from coming under the rule of one single man. In Shakespeare's play of "Julius Cæsar" is the thrilling account of the tragedy, and the speech of Mark Antony over the body of Cæsar. A part of this noble speech is given on page 2931.

Civil war followed, during which time Egypt became a Roman province, as we read in the story of that country beginning on page 4841. But after the death of Mark Antony, of whom we read

in the story of Cleopatra, Octavian, afterwards called Augustus, the adopted son of Cæsar, slowly and carefully gathered all power into his own capable hands till the Romans found that they could not do without him.

When he called himself *imperator*, whence comes our word *emperor*, it meant that he was the holder of a military command from the people. When he became censor, he could influence appointments to the senate; as *princeps*, or prince of the senate, he could always speak first at its meetings. Then he became chief magistrate of Rome, and head of the national religion.

Many wise changes were introduced which brought about law and order, not only in Rome, but in Italy and the distant provinces. And so, without trouble, the ancient republic passed away, and the rule by one man was set up.

AUGUSTUS, WHO RULED THE WORLD WHEN JESUS WAS BORN

In the time of Augustus there were so many great writers in Rome—such as Virgil, who wrote the splendid poem about Æneas and the founding of the city; Livy, the historian; and Horace, the interesting poet—that to this day a period full of great writers is called an Augustan Age.

But the great epoch-making event that took place in the reign of Augustus was the birth of Jesus in the far-distant province of Syria. It was Augustus who, all unknowing, determined the place of the birth of Jesus, for the emperor ordered a census, or counting of the people, which Mary was on her way to attend when Jesus was born in the little town of Bethlehem not far distant from Jerusalem.

How astonished the powerful emperor and all the great men of his time would have been if they had known that it was not their fame or achievements that would so greatly influence the world, but rather the life and words of the humbly-born Babe, who grew up to work in a carpenter's shop, and who, later, had not where to lay His head.

Augustus was the first of a line of emperors who ruled the world for 300 years. We can read their stories and look at their faces in the part of this book beginning on page 535. Gathered in the great museums in Europe are many deeply interesting memorials of those great but sometimes wicked days—

A CITY THAT WAS LOST FOR 1,700 YEARS



Pompeii was an old Roman city in Italy that existed 500 years before Christ was born. Close by was an old volcano called Vesuvius, which had been harmless many centuries. But in the year A.D. 79 the volcano suddenly burst into eruption, and in one day Pompeii was buried in the ashes from the burning mountain, and about 2,000 people were killed. The city remained buried for about 1,700 years. Then men began to dig in the place where it had been, and the ruins of Pompeii have now been dug out, so that we can walk through the streets that lay underground, and see the houses and shops in which the people lived so long ago.

These photographs are taken by the famous photographers in Italy Alinari Brothers.

armor, weapons, sculpture, pens—which were called *styli*—inkpots, shoes, keys—for slaves could seldom be trusted—purses and money.

THE CITY THAT WAS BURIED IN A STORM OF FIRE

All these things, and many more, cause us to feel at home with the old Romans. Some of the most wonderful of these things come from the cities of Pompeii and Herculaneum, which were overwhelmed by lava and ashes from Vesuvius in the year 79. So fresh are the colors of the paintings on their walls, so modern their subjects, and so like ours are the cooking implements, that we can scarcely realize how long ago the awful and sudden burial took place. This sealing up by Mother Nature of the city of Pompeii has kept intact for us the very cart-tracks in its streets and the scribbled advertizements on its walls, as well as such matters as the arrangement of houses, baths, and theatres.

In Rome itself, the temples to the gods and the palaces for the emperors were very numerous. Many of the Roman emperors did something toward beautifying the old city on the seven hills. There is the arch of Titus, which we see on page 5048, showing his victory over the Jews and the spoils of the Temple being carried round Rome in triumph. He and his father, Vespasian, built splendid baths and the Coliseum which we see on page 635.

In this vast amphitheatre thousands of spectators sat watching the games and shows that the emperors provided to keep the mob in good temper. Its ruins are among the most impressive and astonishing in the world.

THE GOOD EMPERORS WHO RULED ROME FOR A HUNDRED YEARS

Trajan built the magnificent Forum, with galleries and walls round its open square, and here he set up the column of which we read on page 5041. This gives the chiseled picture of Trajan's victories over the Dacians—the barbarians across the Danube. The walls of a Roman house have been brought over here and set up in the Metropolitan Museum to help us to realize what the home life of the Romans was.

For a hundred years after Trajan, good emperors ruled in Rome, and there was a time of peace and prosperity.

The work of fine artists makes the

grandeur and brilliance of imperial Rome still live for us. For we can watch them feasting amid showers of roses, or listening to the old Greek stories in gardens by the blue sea, or joining in magnificent processions. But while the careless luxury was going on, ever round the frontiers of the empire the rough, strong peoples were encroaching and gaining little by little. In the middle of the third century there was defeat on every side. The Goths and the Vandals were terrible foes, who could not be driven back, and the empire began to break up.

We know how Constantine favored the Christians, and how he founded a new capital in the East about the year 330, and how, in the next century, the empire was divided into two, with Constantinople for the capital of the eastern half, and Rome for that of the western.

There was a terrible time when the Goths poured down the peninsula and took Rome itself, in 410. So much damage did these rough people do that to this day we speak of anyone who is careless of beautiful things as a Goth.

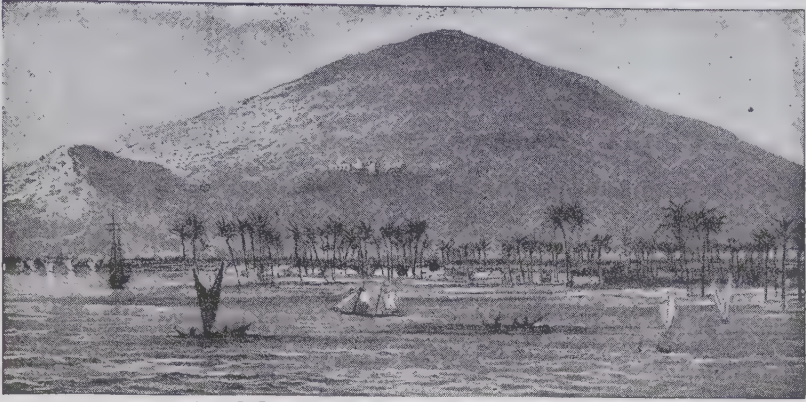
HOW THE SPIRIT OF ROME LINGERED ON IN THE WORLD

But the spirit of Rome lingered on. In the West the barbarian conquerors settled down in Spain, Gaul, and Italy, and learned the language and customs and manners of the people of the old Roman provinces, and to the Christian bishops of Rome was given in these countries a headship which still exists.

In the East a long struggle against Huns and Persians, Arabs and Turks, lasted on, as we know, till the taking of Constantinople in 1453 made that city the capital of the Turkish Empire.

What a pageant the long story presents to us! Always, the tramp of soldiers from first to last, and for centuries we hear the steady sweep of the oars as the prowess, with victory aboard, point from end to end of the Great Sea. As we dream again of the early legends, of the grand buildings, the wild revelry, the yells of the storming barbarians, we feel that the sickly perfumes of the extravagant baths and feasts are overpowered by the fine smell of freshly-turned earth under the freeman's plough. For we forget the evil, and remember only that figures of heroes are passing by.

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AN ISLAND IN THE SOUTHERN SEAS

A HEROINE OF THE SOUTHERN SEAS

FAR away in the Pacific Ocean are the Hawaiian Islands, for the most part formed of coral, but with lofty volcanic mountains in their midst.

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One of these is named Kilauea, and is one of the largest and most terrible volcanoes in the world. Its enormous crater contains a lake of liquid fire, from six to nine miles round, and the smoke of it rises like a cloud by day and night. The natives used to believe that amid the fire there dwelt a fierce goddess named Pe-le, whose bath was in the mighty crater, and whose hair was the glassy threads that covered the hills. Every one stood in awe of Pe-le, but especially women.

The priests said that if a woman climbed the mountain, or ate berries from the sacred bushes, the goddess would "shake with her thunders, and shatter her island."

But a hundred years ago Christian missionaries from this land were sent to the island, and gradually the people gave up their faith in the fierce and savage deities they had worshipped, and began to serve the one true Maker of heaven and earth. Only, the fear of Pe-le was still upon them, and her flaming mountain was the heathen stronghold.

Then it was that the Princess

Kapiolani, wife of Naihe, the public orator of Hawaii, a brave Christian wo-

man, strong in faith and courage, resolved to defy the goddess in her fastness, and break the spell that bound the people. This was in 1825.

One day, Kapiolani climbed the mountain, a toilsome ascent of two and a half miles, which became very dangerous when she reached the slippery sheets of lava, and the slopes of crumbling cinders.

The enraged priests of Pe-le came out of their sanctuary among the crags, and tried to bar her way with threats, but she heeded them not. She plucked and ate the sacred berries, and then pressed on to the summit, and clambered down the side of the terrible crater, till she reached the brink of the boiling sea of fire.

Standing there, she flung pieces of rock into the fiery flood and cried: "My God is Jehovah. It was he who kindled these fires. I do not fear Pe-le, and I now defy her, knowing that the true God will save me."

Then she sang a hymn of praise in which the watching people joined when they saw that she was not destroyed.

Safely Kapiolani descended the mountain, having broken the power of superstition by her brave deed, and won her cause of faith and freedom.

A TALE OF MANY LANDS

HOW BAULDOUR THE BEAUTIFUL WAITED A HUNDRED YEARS

PECOPIN was handsome and Bauldour was beautiful, and they loved each other. Pecopin was the son of the Burgrave of Sonneck, and Bauldour was the daughter of the Lord of Falkenburg.

One owned the forest; the other owned the mountain. What could be better than to marry the mountain to the forest? The two fathers came to an understanding and Bauldour was betrothed to Pecopin.

I

THE TALISMAN

This happened in April, when the whitethorn flowered to the sunshine in the forest, and a thousand charming little waterfalls, made of snow and rains transformed into brooks, danced in music down the mountains. Pecopin had all the qualities of a brave and gentle knight; Bauldour was a queen in her castle, a humble and holy maiden at church, a fairy-like creature in the woods, and a good housekeeper.

It was said of her that her eyes were the sweetest ever seen. She spent most of her time at her spinning-wheel, and Pecopin went out all day hunting. He knew where the eagle had his eyrie, and the kite his nest. He could tell the trail of all the wild beasts in the forest. Only at dusk, when they went down to the drinking places, did the animals feel quite safe. They knew that at this hour Pecopin always went to Bauldour's bower. The day appointed for their marriage drew near. Pecopin became more joyful; Bauldour became more happy. Bauldour went on spinning in her bower; Pecopin continued to hunt in the forest.

One day as he crossed a clearing, a horn sounded, and a glittering troop of noblemen came out of the thicket. The great Count Palatine was there.

"Come with us, you handsome young huntsman!" he cried.

"Where are you going?" said Pecopin. "And what are you going to do that I should accompany you?"

"Young knight," replied the Count, "we are going to hunt at Heinburg a kite that destroys our pheasants; we are going to hunt at Vaugstberg a vulture

that kills our young hawks; we are going to hunt at Rheinstein an eagle that slays our falcons. Come with us."

"With pleasure!" said Pecopin, for next to Bauldour he loved hunting.

The hunt lasted three days. The first day Pecopin killed the kite; the second day he killed the vulture; the third day he killed the eagle. The noblemen were jealous of the newcomer, but the Count was amazed at the feats of the young huntsman.

"Sir Pecopin," he said, "you shall have my estate of Rheinech. Come with me to receive it."

The Count was a great lord and there was nothing to do but to obey. Pecopin sent to Bauldour a letter in which he sadly announced that the Count had compelled him to go. "But do not let this trouble you, my sweet lady," he added at the end of the letter, "I shall be back next month."

The Count was so delighted with Pecopin that after some time he said:

"Pecopin, I am sending an embassy to the King of France, and I have chosen you as my ambassador because of your knightly renown."

Pecopin went to Paris, and the French king was also pleased with him, and, taking him one morning by the hand, he said:

"I want some noble and well-spoken lord to take a message for me to Spain, and I have chosen you as my ambassador because of your great intelligence."

Again the marriage had to be put off while Pecopin set out for Spain. At Granada the Moorish ruler received him very kindly, and when Pecopin went to say good-bye, his host said:

"We must indeed say good-bye, my handsome young Christian knight, for you must start at once for Bagdad."

"For Bagdad!" cried Pecopin.

"Yes," said the Moor; "for I cannot sign the treaty with the King of France without the consent of the Caliph, the Commander of the Faithful. I must send some person of consideration, and I have chosen you as my ambassador because of your handsome face."

When you are among the Moors you

must go where the Moors want you to go. So Pecopin went to Bagdad, while Bauldour went on spinning.

There he had an adventure. An old negress gave him a talisman in the shape of a great turquoise, saying:

"This is sent by a princess who loves you, and whom you will never see. So long as you wear it you will remain young. When you are in danger of death, touch it, and it will save you. It is the pledge of a great sacrifice in the manner of its coming to you, and also as it will leave your keeping."

Pecopin knew nothing of the princess, for his thoughts were ever with Bauldour. Still he put the ring on his finger and then almost forgot it. Now, this princess was the favorite daughter of the Caliph of Bagdad. She had watched the young knight from behind the barred windows of the women's quarters, and fallen in love with his fairness and strength. But the Caliph was very angry that she should have fallen in love with a Christian knight.

Taking Pecopin by the hand, he led him to the top of a high tower, and said:

"Young knight, the Count sent you to the King of France because of your knightly renown; the King of France sent you to the ruler of Granada because of your great intelligence; the ruler of Granada sent you to the Caliph of Bagdad because of your handsome face; and I, because of your knightly renown and your great intelligence and handsome face, send you to death!"

As he pronounced the last word the Caliph pushed Pecopin from the top of the high tower.

As Pecopin fell through space his last thought was of Bauldour. He put his hand on his heart, and, without knowing it, he touched the talisman.

II

A NIGHT'S HUNTING

On touching the magic turquoise, Pecopin felt as if he were being carried along by wings.

He no longer fell; he soared. If he came to a mass of cloud, to his great joy he found that he could fly above it. If he met a wind, he did as he had seen the hawks do, and lo! he was master of its strength. He continued to fly all through the night, and at break of day the in-

visible hand which upheld him put him down on a lonely shore on the edge of the Arabian Sea.

For a long time Pecopin wandered about, vainly endeavoring to return to Falkenburg. Sometimes he went barefooted, sometimes he walked in sandals. He rode on the ass, the horse, the mule, the camel, the zebra, and the elephant. He voyaged on all kinds of boats, and encountered all sorts of winds. He was sold as a slave in one country, and made a king in another. Several times he was shipwrecked, but he always escaped, and never did he cease to yearn for home.

At the end of five years, Pecopin was still seeking for Bauldour, and one day he found himself in the Forest of the Lost Tracks. No one who enters the Forest of the Lost Tracks ever finds a way out of it, and Pecopin, feeling that all was over, threw himself face downward on the ground, crying out:

"I shall never see Bauldour again!"

"Yes, you will!" said some one by his side.

Pecopin sprang up. He found himself face to face with an extraordinary old nobleman, clad in a magnificent hunting dress. His eyes shone like black diamonds out of a wrinkled face, and he was thin and bent with extreme old age, but his manner was gracious and pleasant.

"What do you want with me?" cried Pecopin.

"To take you to Bauldour," said the old huntsman, with a strange smile. "Spend this one night hunting with me, and at break of day I will put you down by the gate of Falkenburg."

"Willingly would I do so if I could, for that is my heart's desire, but I am worn out with walking," said Pecopin. "I am dying with thirst and hunger. I could not even mount a horse, and to hunt is beyond my power."

"Drink this," said the old huntsman.

Scarcely had Pecopin taken the mouthful from the flask, which the huntsman gave him, when all his powers returned. He was again strong, and alert, and eager.

"Come on!" he exclaimed. "I will hunt all night with you if I can see Bauldour in the morning!"

"Hunt's up!" cried the old huntsman, turning toward the thicket. "Hunt's up!"

A troop of knights, dressed like princes

and mounted like kings, came out of the underwood, and ranged themselves in profound silence about the old huntsman. It was now dark night, but the place was lighted up by two hundred grooms clad all in black carrying two hundred torches. A vast pack of hounds of all kinds was led, yelping and straining at the leash, to the old huntsman, together with two splendid horses.

"Take which one you will," he said to Pecopin.

Pecopin mounted a superb steed; the old huntsman did the same. And away they all went like the wind.

Putting his hunting horn to his lips, the old huntsman blew a terrific blast that rolled out upon the midnight air like thunder, and at the tremendous sound the forest lit up with thousands of extraordinary lights, which reflected in the dark face of the sky.

Then a great black mist fell upon everything, and Pecopin rocked and swayed along in the darkness in a strange, violent, supernatural gallop that amazed and frightened him.

Now and then, when the mist lifted, he caught a glimpse of an enormous stag with great antlers fleeing in front of the wild huntsmen. Then he saw in the distance the broad, moonlit sea. He tried to stop his horse, but it would not stop; he tried to throw himself out of the saddle, but, when he made a movement to dismount, his feet were gripped as with iron bands. He looked down, and saw that his stirrups had become fierce living things, grasping him tightly and holding him close to his saddle.

The wind became hot and stifling. Pecopin gazed round, and saw that he was galloping through India. A quarter of an hour afterwards he was chilled to the bone. The air was dim with snow, and the hard, frozen ground rang with the sound of the innumerable hoofs of the horses.

Suddenly Pecopin's horse stopped short, and all the sounds around him ceased. He found himself alone at the open gate to a colossal building, pierced with rows of lighted windows.

While he was wondering what to do, his horse leaped through the gate and carried him into an immense hall. Here the old huntsman and his companions were sitting round a great table, on which, in an enormous dish, was the stag with

spreading antlers, roasted, blackened, and smoking.

"Now you must sup with us, Pecopin, after our great hunt," said the strange old huntsman.

But as he spoke, a cold white gleam of daylight came through the eastern windows, and a cock crowed. The great building seemed to totter and crash around him, and in the faint light of dawn, Pecopin saw the black forms of his companions stream upward through the air. A cold wind, keen as a spur, blew upon his face and with a cry he fell from his horse to the ground. When he rose up he found himself alone by the gate of an old castle. He looked at it, and shouted with joy. It was the Castle of Falkenburg.

If only a flash of lightning were in the habit of climbing the stairs, I would compare Pecopin to it. In the twinkling of an eye he reached the fifth story of the castle, where Bauldour used to sit, and he heard the sound of her spinning-wheel through the closed door. But on entering the room he found there only a poor, wrinkled, withered figure, crouching by the window, her eyes bent over a spinning-wheel.

"Where is Bauldour—my beautiful Bauldour?" said Pecopin to her. "Bauldour, with eyes sweetest ever seen, and hair like floss silk. I have come back at last to marry her!"

The strange little withered figure tottered across the room, and with a faint cry threw herself on Pecopin's breast. It was Bauldour. She was a hundred and twenty years old! All through the long years she had waited for Pecopin, and never had she despaired of his return.

The night's hunting which Pecopin had spent with the wild huntsman had lasted a hundred years, though it had only seemed a few moments, but owing to the magic talisman, Pecopin himself was still as young and handsome as ever.

What should he do now? He still loved Bauldour, but he could not make her younger. At last, remembering the princess' words, he threw away the talisman; and then, aging a hundred years in a single moment, he came back to his sweet lady and married her. And they lived together, quietly but happily, at Falkenburg. But the whitethorn never flowered to the sunshine in April again, and the little waterfalls sang no more.

THE SAD HEART OF LITTLE TROTT

This pathetic little story is told by the French writer André Lichtenberger.

A GREAT sorrow has overwhelmed the heart of Trott.

No one loves him any more at all. Well, perhaps, just a very little still; but it is not as it used to be. And when one has been petted and loved tremendously, that is not enough. Trott has a heart like lead; it is just as if he had eaten too much apple-tart. And to-day things have gone worse than ever.

This morning Trott was taking his lesson with his governess, and he was grumpy. Although, as a rule, he is very polite, he said a word to her which was not quite proper. And papa, who was coming in at that moment, heard it. Trott was not allowed to have any dessert. Alas! there was whipped cream that day.

After luncheon Trott hurried away from the room to stretch his legs. He rushed angrily out of the dining-room, and slammed the door. His baby sister woke up and uttered a dismal howl. Mamma said: "Trott is insufferable!"

That evening, when he returned from his walk, it was almost dark. At such a time one has a rather melancholy feeling, and it is nice to be petted. Trott thought he would go and find his mother, and sit in his usual place in his own little chair beside her couch. He found the place occupied by little Lucy in her cradle.

Mamma was so busy crooning and making pretty faces to the baby that she gave Trott scarcely more than one hasty little kiss. Trott felt very cold, and bruised about the heart. He went to the window and sat there quite alone, watching the night's slow descent over the garden, and feeling very hurt.

And now papa comes in. He takes a seat close to baby-girl, and says over his shoulder to Trott:

"Hallo, my boy! Are you still sulking?" And then he begins chatting with mamma about baby, who is clutching his finger.

Trott hides himself in his corner. His wretchedness grows still deeper. It is certain now, absolutely certain, that no one loves him any longer. Hitherto, when he was naughty, they scolded him a little, and then it was over; they embraced him more than ever afterwards, so that he felt it was very good to have been scolded. But to-day they have scolded him severely, and have not caressed him at all afterwards. What shall he do? Oh, to think how they had once loved him—a great deal, ever so much! And when he had been ill—ah, they had loved him tremendously then! Suppose he were to fall ill now! Perhaps...

It is an idea. Baby has been carried away. Nobody is looking. Father and mother are talking in a low tone. With a quick movement Trott gets up and stands on his chair. He leans both hands on the back and gives a strong push. The chair falls over with a frightful crash, and Trott rolls on the floor into the middle of the room.

Mamma utters a loud scream. Papa rushes towards Trott and hurriedly examines his forehead. But mamma wishes to have him to herself; she snatches him up, takes him upon her lap, hugs him, caresses him, calls him all manner of dear and tender names. Trott cries with joy and with pain, for he has a big bump on his forehead.



TROTT GETS UP AND STANDS ON HIS CHAIR

"How did you manage to fall over, poor little man?"

Trott cannot reply. He is sobbing too fast. At last he manages to blurt out, between two big sobs:

"I—did it—on purpose!" Father and mother look at each other in bewilderment. What can the boy mean? What is to be said to that?

One must never tell a lie. Although it is difficult, with so many tears running away from his eyes, Trott tells the whole truth. He did it on purpose because he wanted to know if mamma and papa really did love him any longer. He knew, of course, that they could not love him, being old, as they loved his sister, who was new. But he thought that perhaps they could still love him a little bit. He wanted to find out. And now he is quite happy, he is very glad, although . . . The torrent of tears increased in violence.

Mamma passes a loving arm around Trott's neck and gently mops his burning

eyes. Papa holds the little hands in his. They both smile, but it is a very tender smile. The music of their sweet and gentle words begins to soothe Trott's heart. He is told something, too, which appears very grand and wonderful in his ears. It is quite plain that he is loved just as much as ever, quite as much even as little Lucy. They love her because she is so weak and helpless. He is a fine, big, strong boy, and he must watch over baby sister, guard her and help her, because she has no strength. It is Trott's duty to look after this baby. And they love him quite the same, most certainly, every bit as much.

Papa lifts up his little son in his arms, presses a big kiss on each cheek, and asks, as he looks him in the face:

"Now, are you comforted at last, my little man?"

And Trott replies, his eyes still red, but with a smile on his lips:

"Yes; but, all the same, I am very glad I made such a big bump."

THE FABLES OF ÆSOP THE SLAVE

THE DOVE AND THE ANT

ONE day an ant, when drinking beside the stream, fell into the water, and the current was fast washing her away. A dove, pitying her distress, picked a twig from a neighboring tree and dropped it into the water. The ant



was able to crawl upon this twig, which presently lodged against the edge of the stream, and so she escaped with her life.

A short time afterwards a man with a gun attempted to shoot the dove; but just as he had taken aim and was about to fire, the ant crept up the back of his boot and bit his leg so hard that he gave a sudden start, which caused him to miss his aim, and so the dove flew safely away.

One good turn deserves another.

THE DOG IN THE MANGER

ONE day a large dog jumped into a manger full of hay, and, finding that it made a nice bed, lay down there to sleep. Presently an ox who was very hungry came up and wanted to eat the hay.

As soon as the dog heard him, it sprang up and barked furiously. The ox again tried to get at the hay, but the dog threatened to bite him if he came near.

The ox then said:

"Why will you not let me eat my hay? It is of no use to you, for you cannot eat it yourself."



"That doesn't matter," snarled the dog. "If I can't eat it myself, I won't let anyone else eat it either."

Selfishness is one of the ugliest faults we can have.

The Book of Wonder

WHAT THIS BOOK OF WONDER TELLS US

IN this part of the Book of Wonder the Wise Man has told us a very curious thing,—that nothing ever really comes to an end. It seems to us when we see the wood burn up and the water boil away that this cannot be true, and yet we learn that though the form and shape of everything may change, it can never really end, for the water becomes steam and the wood turns to ashes. There are so many things that puzzle us, and we wonder what it is that makes a rocket go up into the sky ; why some waters petrify wood ; why a lamp gives a better light with the chimney on than off ; why the grass turns yellow when it is made into hay. All these troublesome questions the Wise Man answers for us, and many more beside. He tells us what it is that makes the Aurora Borealis, why this wonderful light appears in the northland, and why it is that people are so very silly as to believe in what the gypsy fortune-teller says.

MUST ALL THINGS END ?

ALL things do not end. We can think in a moment of a hundred things that end—such as, say, a piece of string, a stick, a fire that dies out, a river, or a race. These have one sort of ending that we can see with our eyes. We can think in a moment of a hundred things that end *for us*—such as, for example, a storm, which comes to an end as far as we are concerned, though we cannot say that the rain really ends, because the storm may have gone somewhere else. Or we may be watching a ship pass at sea, and the beautiful sight may come to an end because the ship passes from our view ; but the vision is ended only for us, because, of course, others may watch the ship from beyond where we happen to be.

There are other things which we may allow to end or not, as the case may be, because we can control them. There are many cruel things in the world which men might bring to an end if they would, such as bull-fighting in Spain, or the cruel treatment of children by drunken parents in America. Men could stop these things if they would, as they can stop the ticking of a watch.

A clock has lately been made which is expected to run for ten thousand years, so that we might think that that clock, at any rate, has no end. We may be sure, however, that the stuff of which the clock is made will

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crumble away in less than ten thousand years, and that brings us to what

this question really means. We know that nothing can be utterly destroyed, and so we know, therefore, that nothing can be utterly ended. *But the form and shape of everything may end.* The stuff of which the clock is made may crumble ; but though it is no more a clock, it is still stuff of another kind which we may call dust. And no doubt it might change, in millions and millions of years, through the action of natural forces that are always at work, into stuff of which another clock might be made. And so, of course, if a clock can end as a clock, the wall on which it hangs may end as a wall ; the house which the wall supports may cease to be a house ; the street in which the house stands may cease to be a street ; the town through which the street runs may cease to be a town ; and the very earth itself may cease to be as *we know it now.*

But, although man has not yet learned all that he has to learn, everything that man knows tells us in the plainest possible words that the earth can never be destroyed, however much its form may change. We speak of a thing wearing away ; but nothing really wears away : its form changes, that is all.

So that what comes to an end is not a thing itself, but the form of a

thing. The desire for excitement will not end in Spain, but the day will come when it will be satisfied by something nobler than bull-fighting.

This book may end, in the form in which we hold it in our hands; but the thoughts this book has put into our minds, the feelings that have grown, perhaps, in our hearts as we have read it, will remain and influence our lives. Of one thing let us be sure for ever—that goodness never ends, that all this beautiful world, this wonderful life of ours, was not created by God to exist for a few years and then to die. The changes of Nature are sometimes more than we can understand, and the last change that we know, the sleep that we call death, is the strangest of all. But it is a sleep, and not an end.

WHY IS FOOD DEARER AT SOME TIMES THAN AT OTHERS?

Food is of many different kinds, and some foods are affected by the season of the year; so, of course, we should expect to find that certain fruits and vegetables are dearer at some periods than at others, for sometimes they are in season, and are so abundant that they can be sold for little more than the cost of picking and carrying them, and at other times they have to be forced under glass, or brought long distances from warmer regions.

But other kinds of food often vary in their price, and if we wanted to know all the reasons of this, we should really have to study the question of cost and price, which is a very big matter. We can understand that supposing, for instance, Australia starts sending larger numbers of rabbits prepared for eating, or New Zealand starts sending greater quantities of mutton than usual to any country, or Argentina produces larger quantities of beef, the price of meat will fall because there is a greater supply of it, and the people who provide these things at home will have to lower their prices.

IS THERE A REASON FOR EVERYTHING?

It is indeed the first of facts that there is a reason for everything—for the existence of everything, and for everything that ever happens in the world. This has long been seen to be true of certain things, like the movements of water, the facts of chemistry, and even of plants.

But it was long supposed that things were different in the outside world from what they were in the inside world, and men did not believe that there were causes for all their thoughts and deeds, as well as for the falling of a raindrop. We are sometimes foolish in these matters, for we admit the cause of a thing when we see it; but when we do not see it we are likely to deny that a cause was there at all. The special word for causing is *causation*, and the first and greatest belief of science is that causation is universal, without any exception either in place or in time, either in the conduct of the weather or in the conduct of men. We often take this for granted nowadays, as if it did not need saying, but it has taken all the thought and study of all past ages to prove, and the great majority of people, even to-day, do not realize that everything has a cause, and that consequences are endless. Every effect is the cause of further effects, and every cause or reason of things has its own cause or reason behind it. And so, if we think, we shall soon see that we must go back to the First Cause and All-Reason, the Cause of causes, whom men call God.

HOW IS THE AREA OF A COUNTRY MEASURED?

The difficulty in measuring the area of a country depends entirely on the shape of it. There is never any difficulty in measuring the area of a thing so long as it is a rectangle in shape. *Rect* is simply the Latin form of right, and a rectangle is a thing the angles of which are right angles. The simplest kind of rectangle is, of course, a square; but two opposite sides of a figure may be very much longer than the other two, and yet we still have a rectangle, if all the four angles are still right angles. These pages are rectangles, though they are not squares.

Now, nothing can very well be easier than to measure the area of this page or of a country which, like this page, is rectangular. If the rectangle be a square, we measure the length of one side and multiply the figure representing the number of miles by itself, and we have the area of the square in square miles. In the case of this page or any rectangle that is not a square, we multiply the length of one side by the length of a side next to it, and, if we are measuring in inches, that gives us the area in square

inches. Of course, most countries are not rectangular, and the more irregular their shape, the more difficult will it be to measure their area. The principle at work is that which we have described, but its application will often require a great deal of intricate working out.

WHAT IS POSITIVISM?

Positivism is the name of a kind of new religion invented by a remarkable Frenchman called Auguste Comte, who was born in 1798, and died in 1857. Comte believed that the only kind of real knowledge we have is simply our knowledge of things around us. He believed that men's thoughts showed three stages. In the first, they believed in gods or in God; in the second, they believed in all sorts of abstract words; and then there was the third stage, which he called the positive stage, where men confined themselves to things about which they could have positive knowledge.

His religion included a great deal of regulation of human society, and very careful education of the young. It is often called the "religion of humanity," because Comte believed that men should worship humanity, the Great Being of which they are a part; and he invented a new calendar commemorating the names of great men of the past.

Positivism contains many beautiful and noble elements, but not in one case out of millions does it satisfy human nature; and so, though positivists still exist in various parts of the world, they are extremely few in number, and the expectations of Comte have been quite falsified. Comte was, however, a great and genuine student of society, and he discovered various important truths about mankind, and said so many wise and deep things that his name cannot be forgotten, even though the religion he invented is certainly a failure.

WHAT MAKES A ROCKET GO UP INTO THE SKY?

A rocket is made to go up into the sky by means of an explosion, just as a bullet is fired from a gun. All explosions are of the same kind; they are due to a certain amount of gas, which has been compressed, forcing its way out so that it can occupy more space. If we allow it to force its way out only through a certain route, and if we put a bullet or a

cork or a rocket in its way there, it will drive these things out, and may send them to a distance of miles.

Sometimes the gas that does the work already exists, and is first compressed, and then allowed to spread itself out again. That is the case with a pop-gun or an air-gun. But when we fire an ordinary gun, or when we send a rocket up into the air, the gas which does the work is made on the spot.

In some way or other we cause the burning, or combustion, either of gun-powder or of something like it, within a very tiny space. The burning produces a quantity of gas which is all the more liable to expand because it is very hot, and which, so to speak, wishes to occupy many hundreds or thousands of times more space than the stuff from which it was made. Of course, we must be sure that it will only travel out in one direction, for otherwise the gun or rocket will burst.

CAN WE BREAK OUR HABITS?

Of course we can. But we must know what we mean when we speak of habits. In some ways breathing and eating might be called habits, and we know that we cannot break them, for they really depend upon the very structure and needs of our bodies. But real habits are all things learned, and are not essential, and as they can be learned they can be unlearned; we can learn the new habit of *not* doing the thing we were in the habit of doing. Almost any ordinary habit can be learned or unlearned in about six weeks.

There are certain special habits, in some ways different from the others, which consist in using certain drugs, such as alcohol, tobacco, opium, and many others. These habits differ because they do not consist merely in the brain learning to do a thing over and over again. These drugs leave behind them in the body poisons which injure it and make us uncomfortable, and then the easiest way in which we can feel better is by taking more of the thing we began with. But these habits also can be completely broken. People always profess great astonishment when "the habits of a lifetime," as they say, are changed; but, as a matter of fact, this happens every day, and is true in some respect or other of almost everybody.

WHY CAN SOME WATERS PETRIFY WOOD ?

The word petrify comes from a Greek word which means a rock, and that is also the meaning of the name Peter. If water petrifies wood, it must contain in itself something of the nature of stone or rock ; and, in fact, stony material is actually laid down and left on the wood, which is therefore turned into something like stone or rock. The woody material itself may altogether disappear, but the tiny particles of stone are laid down just as the wood was. The water that can do this must be water containing various kinds of mineral matter dissolved in it in the form of salts. These salts may be of such a kind that when they are exposed to the air they change, and instead of remaining dissolved in water they become undissolved and turn solid, and are left behind.

The best example of such a salt is carbonate of lime, the common chalk that we all know so well. Chalk will not melt in water, but though carbonate of lime is insoluble in water, another salt, which is almost the same and is called calcium bicarbonate, melts in water quite readily. Now, if water with calcium bicarbonate dissolved in it runs over any surface exposed to the air, the bicarbonate is changed, because the extra quantity of carbon dioxide from which it gets its name passes off into the air, and the salt left behind is calcium carbonate, or chalk, which is insoluble in water ; and so this mineral matter is left behind, and will take any shape, according to the object upon which it is deposited.

WHY DOES A LAMP GIVE A BETTER LIGHT WITH THE CHIMNEY ON THAN OFF ?

There are two good reasons for this, and at first they will sound, perhaps, as if they contradict each other. One reason is that the chimney protects the flame from drafts, and the other is that it makes such a good draft for the flame. We know, of course, how the flame of a match waxes and wanes, flickers, and then brightens up again, because of the drafts to which it is subjected. But if there are no drafts, it will burn more steadily. That is true of the candle-flame also ; and that is one use of the lamp-chimney. But the most important use of the chimney is that it helps to carry away the burned gases from the

flame, which means that it makes a draft for fresh air to come in below and feed the flame. That is the great reason why the flame brightens up so much, and smokes so much less, after the chimney has been put on. The reason why the flame smokes at first is that the oil is only being half burned ; the carbon in it is not being burned at all, and forms the black specks that we see. But after the chimney has been put on, the flame is much better fed with air, so that the burning goes on much more completely, and the carbon as well as the hydrogen in the oil is burned up ; most of the blacks disappear, and the flame burns brightly.

WHY DOES GRASS TURN YELLOW AFTER IT HAS BEEN MADE INTO HAY ?

If there were no microbes in the world this would not happen ; but nearly all the changes that happen in the bodies of living things after they die are due to microbes. This is as true of fish that turns bad as it is of grass that turns yellow when it is made into hay. Perhaps we are prone to forget that grass is part of the body of a living thing, but so it certainly is. It consists of those parts of certain plants which are called their leaves.

These leaves, like all other leaves, have the special duty of feeding on the carbon dioxide of the air by the aid of sunlight, and for this purpose they contain a very wonderful chemical substance called *chlorophyll*, the color of which is green. Like all other chemical compounds which are very complicated, chlorophyll is very easily broken up and changed into something else. On the other hand, most simple compounds, like water, are very stable.

When the leaves of grass die by being cut, the very first compound that suffers from the change is this delicate and unstable chlorophyll. It is broken up into compounds, some of which have a yellow color. We see the same thing in the leaves of a tree in autumn, which the tree has deliberately killed by corking up the channels through which they got their food. The agents at work in all these cases are microbes, the sun, and the air, and water.

WHY HAS NOT SMOKE A FORCE LIKE STEAM ?

The proper way to find out the answer to a question like this is first to

discover why steam has force. When we do this we shall probably find that the fact about steam to which it owes its force is not true of smoke. Now, steam is a word which we use in rather different senses; sometimes we use the word steam for the cloud that comes from a kettle, but every engineer knows that that kind of steam is not of much use in his engines—in fact, it has no more force than smoke has.

The steam that *does* work and has force is water-vapor confined in a small space and pressing in all directions outwards so as to get more room for itself. It desires to expand, and it is this force of expansion that makes it so useful. When it has forced its way out and has taken as much room as it pleases, it has no more force. The force is not in the cloud of steam outside the kettle, but in the steam inside that raises the kettle-lid.

Smoke, on the other hand, has no force, because it has no tendency to expand. Smoke is, indeed, not a gas at all, but only a quantity of small pieces of solid matter which, not being very heavy, can be carried in a stream by the gases escaping from a chimney. These gases might have some force if they were confined in a small space, but once we understand where steam gets its force, we shall see that there is no reason why smoke should have any force.

CAN PEOPLE READ OUR THOUGHTS?

There are, of course, ways of guessing people's thoughts about which we all know something. Some people's thoughts are more easily guessed than others because their faces show more readily the kind of feelings that they have; and if we can read their feelings, we can often guess the thoughts that arouse those feelings. People also vary much in their power of reading other people's faces, and so guessing their thoughts; and there is little doubt that, on the whole, women are a good deal cleverer at this than men. Of course, something depends on how well we are acquainted with the face at which we are looking.

All this is quite different from real thought-reading, which would be the power of knowing what words were actually passing through a person's mind, just as if we were reading those words written upon his face. People at one time gave exhibitions in public, and

declared that they could read each other's thoughts; but in all such cases we know that, somehow or other, the person whose thoughts are supposed to be read communicates with the thought-reader. This may be done so quickly and cleverly as to be well worth seeing, especially as it is often quite impossible for us to guess how the trick is done; but it is not thought-reading. Some people believe that genuine thought-reading really exists, but certainly this has not yet been proved.

CAN PEOPLE TELL OUR FORTUNES?

There is a way in which people can tell our fortunes, and there is another way in which they cannot. No one can be certain of the future, but if we find that a man is strong, and brave, and true, and persevering, we know that certain things are very likely to be done by him. If we find that he eats and drinks too much, is lazy, and cowardly, and cruel, we can, in a sense, predict his fortune also. People who pretend to tell fortunes manage to get a certain amount of success because chance makes them right in a certain number of cases, and also because they study, as carefully as they can, the character of the people who come to them, and they judge by that. They know the tremendous truth that a man's character is his destiny; and so, if they can tell his character, they can tell his fortune.

But they cannot by any means tell a single one of the things for which foolish people go to them. They may sometimes appear to succeed, as when they tell a man who is going to drive a motor-car that at a certain corner he will be killed, because when he comes to that corner he remembers, and fears, and loses control of his car; and there are many cases on record where predictions have come true in this way, but that only proves how very silly indeed people are to go to fortune-tellers at all.

WHAT IS THE AURORA BOREALIS?

For many years past people have inquired as to the cause of the wonderful brilliance called the Northern Lights, or *aurora borealis*, sometimes seen in the north by people in some parts of our land, and still more by those who live farther north than we do. In seeking to find out what causes it, we must first begin

by studying the light of the aurora borealis, and we must do this by means of spectrum analysis. When that is done, we find that the light must have come from atoms of certain elements which form part of the air. These elements have only been known for a few years, and most of them were discovered by Sir William Ramsay. They mostly exist in the upper layers of air.

If we take a collection of these gases, and run some electricity through them, we find that they glow with certain beautiful colors which, indeed, make a very good imitation of the aurora borealis on a small scale. We are therefore inclined to believe that the aurora borealis must be due to electricity somehow exciting these gases as they exist in the upper layers of the air, and causing them to produce this glow.

WHERE DOES THE ELECTRICITY OF THE AURORA BOREALIS COME FROM?

We have lately learned that all hot things give off tiny pieces of atoms, which are now called electrons, and which have powerful electrical properties. This is conspicuously true of the element carbon when it is made hot. Now, the sun is hot, and its outer part contains enormous quantities of carbon; so we may suppose that the aurora borealis is due to electrons from the sun striking the rare gases in the outer part of our atmosphere. But we cannot at all prove our theory unless we call in the help of certain other knowledge which we acquire in this book.

To begin with, how could the electrons get away from the sun? The sun's gravitation would tend to keep them, and if we are to believe that they are shot out from the sun, we must find something which will shoot them. Here our discovery of light pressure, or radiation pressure, comes to our aid. Without our knowledge of it we should have no right to say that electrons could leave the sun at all.

We cannot suppose that at all times electrons are being hurled in any quantity from the sun, and, indeed, we do not find that the aurora borealis is going on at all times. It is only sometimes, when things happen in the sun, and especially when there are many big sun-spots, that we find splendid auroras and also great disturbance of the magnetic needles on the earth. It has long been

known that auroras and sun-spots go together. Now we understand the reason. It is when something or other happens in the sun which makes the sun blaze up and increases the light pressure that electrons can be thrown from the sun in all directions; and some of them, after traveling ninety-three millions of miles at the rate of twenty miles a second, reach the earth.

WHY DO THE NORTHERN LIGHTS APPEAR IN THE NORTH?

When the electrons from the sun approach the earth, it seems as if they are conducted along certain lines, instead of just striking it fair and square. We must remember that the earth is a magnet. Now, if we take an ordinary bar magnet and a lot of iron filings, we find that in the space around the magnet there is what is called a magnetic field, and filings or any such things coming within this field will behave in a certain way. They will run towards the two poles of the magnet, and will arrange themselves between those poles in certain regularly curved lines, which are called the lines of force of the magnet, or the magnetic field.

Now, our study of Nature teaches us nothing more certainly than that size, as such, is of no importance. A magnet is a magnet whether it be a bar of iron an inch long or whether it be the earth on which we live; and what is true of one magnet is true of another. Therefore the magnet called the earth must and does behave towards the electrons coming within its field of force just as a child's small magnet will affect the iron filings coming within its field of force.

So we find that when the electrons approach the earth, they are carried towards the Poles of the earth, and those which travel through the outer air towards the North Pole, or, rather, towards the North Magnetic Pole, cause what we call the Northern Lights.

Thus we have an explanation, long sought for, of one of the most beautiful facts in Nature, and the special interest of the explanation is not only that it is new, but that it depends upon putting together our newly-gained knowledge of light and electricity and magnetism. No wonder, when none of these things were known, that men could not explain the cause of the aurora borealis.

WHAT THIS STORY TELLS US

THE great Canadian nation we know contains in its population two great elements, French and English. Though the country has been under English control for over a hundred and fifty years, we learn that the French language, manners and customs are still common in many parts of the Dominion, and that in some parts English is still a foreign language. This does not mean that the people are hoping to come again under French control, for these people of French descent have learned to look upon their relationship with France as a very shadowy thing, which has nothing to do with their daily life.

THE FRENCH IN CANADA

A TRAVELER through the province of Quebec cannot fail to notice that he is passing through a country of French origin. Though the French flag is seldom seen except on some holiday in company with others, nevertheless on this part of the continent where France once ruled supreme she has been able to leave a permanent impress. This impress is not in the valley of the Mississippi, where a number of French still live, nor in the South, where the time is not far distant when the French language will disappear from Louisiana, but further to the north. The picturesque banks of the St. Lawrence from the Atlantic to the great lakes of the West are the home of a large and rapidly increasing population whose language and customs are so many memorials of the old régime.

THE ORIGINAL IMMIGRANTS FEW IN NUMBER

It is estimated that not more than eight thousand immigrants came from France during the French régime. Many of these were ruined gentlemen and half-pay officers. Louis XIV boasted that Canada contained more of his old nobility than all the rest of the French colonies put together. At the time of the English conquest this little band had increased to 65,000. From 1763, the natural increase of French Canadians has been little less than miraculous. This group has increased until to-day Canada has upwards of two million Canadians of

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French descent, and nearly another million have come to the United States.

In different parts of Quebec the French Canadians are gradually replacing the English-speaking people. Twenty years ago eleven counties in the southeastern part of the province had a majority of English inhabitants; to-day the majority in each case is French. The movement is so considerable that in numerous townships where not many years ago not a word of French was spoken, you would hardly be understood to-day if you spoke in English. The city of Sherbrooke, with a population of 9,000 in 1901, had a slight English majority; in 1911 out of a population of 17,000 there were 11,000 of French origin. The farmers of English, Irish and Scotch descent have gone in great numbers to the West and their farms have been bought by the French Canadians.

The French Canadians have, during the past few years, made many settlements in Ontario. They have invaded the province from three points, the east, the southwest and the north. When the last census was taken there were nearly 250,000 in the province and they are increasing so rapidly that a few years ago, a Toronto newspaper said that in twenty-five years French Canadians would form at least a fifth if not a quarter of the population. They have representatives in the Ontario Assembly and in the Dominion Parliament. The Ontario farmer of

English descent is moving westward, and his place is being taken by the French Canadian. An increasing number is employed in factories and in mills. In the Maritime Provinces over 150,000 more are found. This increase is small compared with that of Quebec and Ontario. The Canadian West does not show large French gains. There are a few centres but the increase in numbers has not been great. The French Canadians are contented to confine themselves to the older provinces.

THE FRENCH LANGUAGE STILL PERSISTS

Outside of the large cities the French language is the only one spoken in Quebec. The language is not so impure as many people suppose. The habitants speak the old dialect of Brittany and Normandy, with a mixture of English, but the educated classes speak excellent French. The better classes of French Canadians take pride in studying the language of the country of their ancestors. The records and the statutes of the Dominion Parliament are always given in the two languages and the same is true of all the motions put by the Speaker. Though the reports of the debates appear daily in French, English prevails in the House of Commons and in the Senate. The French Canadians are forced to speak the language of the majority and it is some evidence of the culture of their leading public men that many among them are able to express themselves in English with a freedom and elegance which no English speaking member can pretend to equal in French. In the legislature of the province of Quebec, French has almost excluded English, though the records are given in the two languages. In the supreme court of the Dominion, the arguments may be in French and the two Quebec judges give their decisions in their own tongue.

THEIR FONDNESS FOR POETRY AND MUSIC

The French Canadians have a natural love for poetry and music. Madame Albani, a French Canadian by birth and education, won great distinction as a singer. No writer of this nationality has as yet produced an opera or a drama which has won distinction for its author. The Church has opposed the theatre, which has never attained a successful foothold in Quebec. Sacred music, so

essential a feature of a Roman Catholic service, has always been cultivated with success.

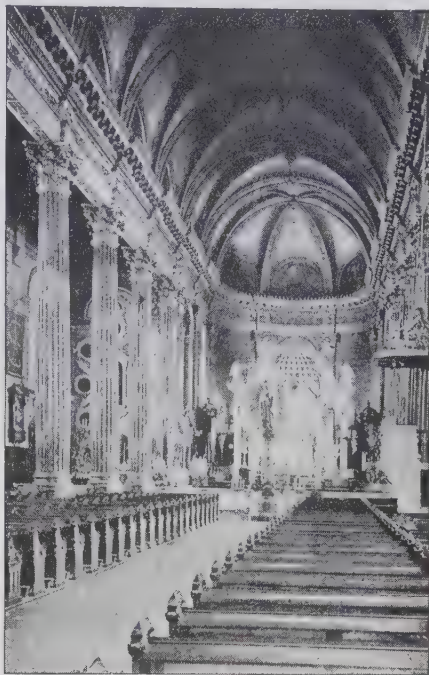
During the past half century, the French Canadians have created for themselves a literature, which shows that they have inherited much of the brilliancy of their race. Their histories and poems have attracted much attention in literary circles in France, and one poet, Louis Frechette, won the highest prize of the French Institute for the best poem of the year. In art, progress has been made and men go to the Paris art schools from time to time. The best-known Canadian sculptor, whose monuments of eminent Canadians stand in several public places, was Louis Hébert, a French Canadian, of whom we read in another place. In romance little has been done. Generally the French Canadians have not distinguished themselves as scientists, though Laval University, the principal educational institution of the higher classes, has among its professors men who have done good work in various branches.

The people are devout Roman Catholics. The numerous churches, colleges, and convents of the country, show the power and wealth of the Church and the desire of the people to glorify and perpetuate it by every means in their power. Jesuits, Sulpicians and Recollets have done much to mold the thought and control the destiny of the people.

EDUCATION AMONG THE FRENCH IS UNDER CONTROL OF THE CHURCH

The education of the French Canadians in the province of Quebec is entirely in the hands of the Roman Catholic clergy and that of the Protestant minority in the hands of a Board of Protestant Commissioners. The taxpayer has the option of saying whether his taxes shall be spent for Catholic or Protestant educational purposes. The priests exert a powerful influence and guard very carefully what shall be taught in the schools under their care and what books shall be read by the people. The educated classes are more independent. The people in the rural districts obey every order from the Church and among them the clergy exert their greatest influence. Only the French language is taught in the schools and in the large majority of the country parishes one would not be understood if the English language were used.

TWO FAMOUS CHURCHES OF CANADA



About twenty miles down the St. Lawrence from Quebec is the quaint little village of Ste. Anne de Beaupré. It is noted for its famous church, which is visited every year, particularly on St. Anne's day, July 26th, by thousands of pilgrims who hope to be cured of their ailments. Here is the outside of the church and the altar, which is famous all over the world.



Notre Dame in Montreal is one of the largest churches in America, and will hold 12,000 worshippers. One of the towers contains a fine chime of bells. The view from this tower is magnificent. The picture on the right is a view of Quebec made from the Parliament buildings. In the background the River St. Lawrence is shown on its way to the sea.

Photographs copyright by H. C. White Co.

SOME GOOD QUALITIES OF THESE PEOPLE

No class of the population of Canada is more orderly or less disposed to crime than the French Canadian. The standard of morality is high. During the rule of France, the king made a gift of twenty livres to each young man who married before the age of twenty and to each young girl married before sixteen. The custom of early marriage is still very common and large families are the rule in all parts of Quebec. Inter-marriages between English Protestants

toms. This promise England has faithfully kept. She has allowed them to dwell under the folds of her flag as a nation within a nation and has permitted them to preserve the things which were dear to them. The French acknowledge this, and admit that they have been as free under the dominion of the British Empire as they ever could have been under French rule.

The French Canadians are proud of their religion, their laws and their language. To them, however, Canada is all in all and their Canada is French Canada.



Habitants Loading Logs In Winter, by Horatio Walker.

and French Catholics are very rare. As a result there is little prospect of an Anglo-French race.

England has shown a broad-minded policy in dealing with the French Canadians, a race different from her own and different also in language, in religion and in traditions. It is wonderful how this hardy people, cut off from the motherland to which they were ardently attached, have preserved their traditions, their language and their nationality. When the country was taken from France, the English government promised that the people should have freedom to practise their own religion, to use their own language, and to follow their own cus-

Modern France is to them a distant relation. England is a venerable stepmother.

Until lately the French Canadians have been much wrapped up with the traditions of the past. A new movement, however, has begun to show itself. They have commenced to pay less regard for the past and to live for the future. They are entering the industrial, commercial, and financial fields, with great success, and are found in every sphere of business.

Proud as the people are of their French origin, they object to being referred to as French. They feel that they are not French, but Canadians, and resent criticism which sets them apart from the rest of the people.

CANADA IS SOMETIMES QUAIN'T, OFTEN BEAUTIFUL



This house, situated on the Saguenay Bay, is inhabited by Canadians of French descent, called habitants. The walls are old, but some features show modern improvements. Rail fences, such as those shown here, which were once universally used in both the United States and Canada, are still common.



Laval University of Quebec is the chief educational institution of the Roman Catholic Church in Canada, and is one of the leading universities of the Dominion. Law, medicine and theology are taught as well as general subjects. The university was founded in 1852 and has a branch in Montreal. The theological seminary is much older. The university has a large and valuable library.

Photographs from Brown Bros.

AMONG THE HABITANTS IN QUEBEC



In the country districts of Quebec many of the habitants live much as their ancestors lived while the country was still a possession of France. This oven is built, as you see, out-of-doors. Naturally fresh bread is not baked every day, but enough is baked at one time to last several days, as it is a considerable task to heat the oven. In former days the habitants had to bake in the seignior's oven.



A hundred years ago such a sight as this was common in the United States, but has now become rare as factories have increased in numbers, and now produce goods so cheaply. Many of the habitant women, however, still weave most of the cloth with which their families are clothed.

THE CANADIAN HABITANT

THE old French system of government divided the country into large estates or seigniories. The owner of an estate was called a seignior and on accession to his lands was required to pay homage to his feudal superior. The seignior divided his estate among his vassals on condition of their making small annual payments in money or in produce. The vassals were also obliged to grind their corn at the seignior's mill, to bake their bread in the seignior's oven, to give their lord a tithe of the fish caught in their waters, and comply with a few other conditions at no time heavy or strictly enforced. Many of these customs endured until within a very short time before the confederation of the provinces.

HOW THE NAME HABITANT AROSE

These original tillers of the soil would not accept the French name "censitaire," which carried with it some sense of the feudal servitude of the vassal in France. They preferred to be called "habitants," the French name for inhabitants, or free men, and not vassals. The name obtained official recognition in New France and has become the characteristic name of the French Canadian farmer among English-speaking people. So the very name which strangers to the Province of Quebec sometimes regard as a term of reproach is really one of dignity.

The habitant may be regarded as the original type of Quebec in very much the same manner as the people of Ontario may claim the United Empire Loyalists as their original type. For the first hundred and fifty years of the history of Quebec, the only white inhabitants were of French birth or extraction. The term habitant has therefore meant the descendants of the early settlers. The attachment of the habitant to the land is very striking. In many instances, farm lands are still held by the direct descendants of those to whom they were granted in the earliest days of the colony.

WHAT THE HABITANT OF QUEBEC IS LIKE

The transfer of Canada to England by France left the habitant in possession of his land and his property. He remained as French as ever in character, in faith and in speech, as much habitant as

ever in his love for the land discovered and colonized by his ancestors.

The tourist who travels through the Province of Quebec sees on all sides the evidence that he is passing through a country of French origin. Here and there he sees houses and churches which remind him of many a hamlet or town that he has visited in Brittany or Normandy. Many of the barns and out-houses have thatched roofs, which are not seen in any other part of Canada. The houses are for the most part built of wood and frequently consist of a single large white-washed room, spotlessly clean, the walls and ceiling hung thick with all manner of household goods and utensils.

The high iron stove is the most important feature of every dwelling in a country where the cold of winter is extreme. A highly colored print of the Virgin and pictures of one or more of the favored saints occupy prominent places on the walls. The chairs and table are as a rule home-made. Two very high beds and bunks furnish sleeping accommodations for the family. Under the beds are tiers of long drawers arranged one above the other. Here is the sleeping place for the children, where you will often find from fifteen to twenty sleeping in their cosy and quaint beds.

THE LANGUAGE SPOKEN IN QUEBEC

The language is French from the Saguenay to the Ottawa, and in many communities English is never spoken, and is understood only by the parish priest or curé. The language is far better than the language spoken by the peasant class in France. In some districts the people retain the language as it was spoken two centuries ago, though without the accent of the older provinces of their origin. In other places it has become mixed with many English words, and in these districts a patois, such as you may read in Dr. Drummond's poems, is spoken.

The habitant is quite as strong in body as the man of English blood in Ontario and is stronger than the peasant of France. He is a frugal, hard-working man, and nowhere will you find a race more industrious and law-abiding. His temperate habits make him a valuable employee in mills and factories of all

kinds. Many prefer this life to that of the farm and until recently there was a steady movement to the manufacturing towns of New England. Of late years efforts have been made to draw them back again to people the new lands in the north of the province.

THE LARGE FAMILIES OF THE HABITANTS

The thrifty habitant rears a large family and is taught that herein he is doing his chief duty to the French Canadian people. He is prouder of his large family than of any other of his worldly possessions. The poorer he is the more delighted he appears to be with his children. Families of from fifteen to twenty children are not uncommon. All do not remain upon the land; some are sent to college and enter the professions, while others go into business or learn trades of various kinds.

The people are very devout Roman Catholics. In the present, as in the past, the Church makes every effort to supervise with a zealous care the teaching and the reading of the people in the rural districts, where it exercises the greatest influence. The parish priest or the curé is the most powerful and dominating person in the every-day life of the habitant. He takes a leading part in all the affairs of the parish and in many instances he determines how his parishioners shall vote at elections.

To-day more independence of thought and action is showing itself in the country districts. The whole land is practically parceled out among the saints as far as the names of the settlements and villages are concerned. The foremost saint appears to be Saint Anne, whose name appears very frequently in all parts of the country. The schools are under the direction of the priests and religious orders.

SUNDAY AS IT IS SPENT BY THE HABITANTS

Sunday is a great day, full of religious practices in the morning and of amusements in the afternoon and evening. The feasts of the Church are kept with great zeal and consequently the French Canadian has holidays without number. The habitant lives contentedly on very little and is happy as long as he is within sound of the church bells, goes regularly to confession and observes all the Church holidays.

Happy in his home and contented with his lot, the habitant's light-heartedness and freedom from worry shows itself in a variety of innocent amusements. He is a born story-teller and nobody is fonder than he of music, song and story. Both young and old are very sociable in their habits and love music and dancing. The violin is the favorite musical instrument and all delight in the old-fashioned dances. The priests do not encourage reckless gaieties or extravagance in dress. Now and then the bishop issues an order forbidding the waltz and other fast dances and certain fashionable modes of dress. His orders are soon forgotten in the villages and the towns, but they are religiously observed in the country communities. The songs are the same in spirit and very frequently in words as those which their ancestors brought from Brittany and Normandy.

WINTER IN QUEBEC IS A PLEASANT TIME

When the days shorten and snow begins to fall, the habitant quits his farm and journeys to the nearest lumber camp. Not a man who can swing an axe or drive a team would miss his winter season in the forests. His social instinct is ministered to by the life in the crowded camp. The hard work in the bitter cold is made merry by shout and song. The long evenings are passed in the telling of stories and the singing of old French songs as the men lounge in their bunks or gather in groups about the roaring box-stove. The family at home also has its diversions. Some of the old men and women are accomplished story-tellers, and the children gather around the fire there to listen breathlessly to the accounts of the *loup-garou*, as well as to pleasanter tales.

The habitant makes no effort to conceal his affection for France. His love for that country is for the land of his origin and his early ancestors. Proud as he is of his French origin, he objects to being referred to as "French." He feels that he is a Canadian; but he has not yet learned that his country is the wide land that stretches from sea to sea; and his loyalty is given almost wholly to his native province of Quebec. Numbers of the habitants have migrated to Ontario and to the western provinces, but lose many of their characteristics there.

THE NEXT STORY OF CANADA IS ON PAGE 5401.



OUR LIVES AND THE NATION

HOWEVER far back we go in the history of thought, we find it recognized that man is, as Aristotle called him, a social animal. "None of us liveth to himself, and no man dieth to himself."

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We are members one of another. No one knows what a solitary human being would be like, for the best of all good reasons, which is that there could not be a solitary human being. Each one of us is part of a great whole. People used to talk of "man before society."

No one, however, can now believe that there ever was a time when man existed and a state of union between different men did not exist; and we are all agreed that Aristotle is right, and that we are social by our very nature. The ancestors of mankind must have been social, and man has been social from the very first.

One remarkable result of this, which has, curiously enough, been constantly forgotten, is that no one knows what a single human being unaffected by other human beings would be like. Not only do we not know, but we never can directly know. We are so made that it is quite impossible for a human being to exist at all apart from the influence of other human beings upon him.

We come into the world helpless—less able to take care of ourselves than any other creature, animal or vegetable—and we remain helpless for a longer period than any other creature. From our first hour

we are dependent upon others, who influence us from the cradle to the grave, so that every one of us is, in some degree, a social product, just as a motor-car is, or a book. We have been partly made by those who have surrounded us, and as no human being can grow up without these influences, it is scarcely worth while even to guess what a human being would be like without them. There could not be such a person.

But we do know that children a few years old have been lost and have managed to live in a wood or forest. As they have grown up we find that such beings have become less than human. They have missed the human companionship which every one of us needs, though, of course, they had it in their earliest years, or they could never have existed. Such persons can only be classed as idiots. Now, the word *idiot* comes from the Greek, and means a person who is by himself and has nothing to do with anyone else, or, as Ruskin puts it, a person who is entirely occupied with his

own concerns. If we take a grown-up, healthy, sane, intelligent human being, and separate him entirely from the company of all other men, he will lose his reason and become less than human. The solitary man becomes insane. All this might be proved and discussed at any length, for it is one of the most important facts in the world. We are members one of another.

THE GREAT TRUTH THAT A NATION IS LIKE A LIVING BODY

We must again go back to Aristotle, and even to Plato, his master, for the next great truth which we must learn—a truth which follows directly from what we have been saying. It is that a nation is not just a number of people, like a heap of bricks or grains of sand, but is a whole—just as a heap of bricks becomes a whole when the bricks are built up to make a house.

We can see that this must be so if every individual is, in part, a product of all the other individuals, and, on his part, helps to produce the others by direct and indirect influences upon them. So we have many phrases to express the idea that, in a sense, a nation is like a great living creature. We call it the body politic, or the social organism, and sometimes figure it as a noble woman—Columbia, for example. This comparison of a nation with the body of a living individual is a very valuable one.

On page 5357 of this book we read that though an atom is a whole, yet it is made up of parts which are called electrons, and we are only now beginning to understand the atom because the key to every fact about it lies in the nature of the electrons that make it.

On a higher plane we learn that the living body, though it is a whole, is made up of parts called cells, which are themselves alive; and we have only begun to understand the living body since we have begun to learn something about the nature of the cells which make it up.

HOW OUR OWN BODY HELPS US TO UNDERSTAND THE LIFE OF A NATION

So, also, we may imagine that the nation is a living body, but that we shall never really understand the life of a nation until we understand the nature of the persons who make it up. That is the great key which governs all true thinking—not the talk of politicians, but real thinking—about a nation. And that

is why we have been very carefully studying the lives, the bodies, and the minds of ourselves, so as to lead up to the study of the nation of which each one of us is a part.

Now let us go a little more carefully into this wonderful comparison between an individual and a nation made up of many individuals.

When we learn the history of life, we find that living creatures were at first made of only one cell each; then of a few cells, which stayed together and were all alike; then of cells, few or many, running at last into billions of billions, which became different from one another. It is in this difference that the possibility of progress lay, some cells doing one thing and others doing another. The same is true in a nation, only it was noticed in the case of a nation long before it was understood in the case of a living body. In a nation we call this the division of labor.

THE DIVISION OF LABOR, WITHOUT WHICH MEN AND NATIONS COULD NOT LIVE

This division of labor does not mean merely that when there is a lot of water to be carried from one place to another the labor is just divided between ten men, each of whom takes a bucket and runs backwards and forwards. It means, so to speak, that one man grows india-rubber and another manufactures india-rubber pipes; that another gets iron out of the earth, while another makes iron into taps; so that by this kind of division of labor the work is done far more easily than if all men did the same thing. Now, when a great Frenchman was studying the life of the body, he saw that this division of labor occurs in the individual body, just as it does in the body politic; and so he called it the *physiological division of labor*, by which name it has been known ever since.

Now with this key we can begin to understand many things. A nation has to live just as the body has to live; it has to have men to guide it, and the men who guide a nation correspond to the nerve-cells of the brain. It has to have men who make special things for the nation and the manufacturers correspond to the gland-cells of the body. It has to have people like soldiers, scavengers, doctors, and nurses to protect it from enemies inside and outside; and the bodies of these protectors

correspond to the white cells of the blood, which kill microbes, remove dirt from the air-passages, and carry medicine and food to the parts of the body that have been injured. There is no end to these wonderful comparisons, but we must pass on to see the deeper meaning of them.

The body could not exist without the division of labor; and the division of labor could not be carried on as it is unless the cells of the body were different. A nerve-cell cannot do the work of a red blood-cell, nor a red blood-cell that of a nerve-cell; and neither of them can do the work of a muscle-cell; and any of the three would make a very poor cell to cover the outside of our teeth. So we might go on endlessly.

Now, the point is that this is precisely true of a nation. If all the cells of the body were born the same, so to speak, it could never be a body at all; and if all men were born exactly the same they could never make a nation.

THE DIFFERENCES IN PEOPLE THAT MAKE FOR THE GOOD OF THE NATION

Fortunately, all men are born more or less different; our faces are all different, and it is now beginning to be seen that this difference in our faces corresponds to deeper differences which are in all of us. No doubt it is true, or ought to be, that we are all born equal in the sense that we all ought to have an equal chance, but nothing is more ridiculously untrue than to suppose that all men are by nature born equal, unless it be to suppose that they are by nature born the same.

We are all born different, and as for equality, we are born on very different levels by nature. But this is necessary and right. One man has great strength and endurance, but nothing else; we cannot say that he is equal to a man who is a great thinker. But that great thinker may be very weak and puny. Each can help the other. Ages ago the Emperor Marcus Aurelius declared that instead of disliking or despising people who are different from ourselves, we ought to say "the universe has need of them." A more modern way of saying this is that "it takes all sorts to make a world." It certainly takes all sorts of cells to make a human body, and in the same way, it takes all sorts of human beings to make a nation.

One of the first needs for any nation is to realize these truths. We must learn that we are all dependent upon one another, both as regards our particular natures and as regards the particular kind of work that we do.

THE FIRST AND GREATEST DIVISION OF LABOR THAT MUST ENDURE FOR EVER

Ages ago, in rude and savage tribes, though there always was division of labor, there was not nearly so much as there is now. The first and greatest and most eternal division of labor, which is that between men and women, is older than mankind and must endure for ever.

There was also a certain amount of division of labor between young and old, between the skilful and the strong, between the enterprising and the stay-at-homes. But just as the difference between a low form of animal and a high form of animal is to be found in the greater division of labor in the higher animal, in just the same way we find that high nations cannot exist without ever more and more division of labor.

More and more people become specialists, just as the five or six different kinds of white blood-cells are specialists, and all white blood-cells taken together are specialists as compared with other blood-cells, and all blood-cells together as compared with the rest of the body. This division of labor, or making of specialists, is a very great fact.

We all know the famous old story of the revolt in the body, when the other parts of it said that the stomach did no part of the work and got all the food. Of course, we see that that would be a very foolish thing for the body.

WHAT WOULD HAPPEN IF THE PARTS OF OUR BODIES QUARRELED

It would be just as bad for the body if the stomach revolted and said it would keep all the food it received. The stomach would get indigestion and the rest of the body would starve. That is exactly what happens when rich men seize all the wealth and will not use it for the rest of the community. And so we learn that one part of the body and one kind of cells ought not to be at enmity with another part of the body and another kind of cells. "A house divided against itself cannot stand." Doctors know that perfect health is perfect harmony. It means that every part of the body, like every part of a

wonderful machine, is serving all the rest and is being served by all the rest, because it is doing its own work rightly in beautiful harmony with all the others.

THE ENEMY OF THE NATION WHO STANDS FOR ONLY A PART OF IT

The great truth we learn from this is that he is an enemy of the nation who stands for any part of it against the others—unless, of course, the others are in the first place injuring it. It must be an injury to the social body to set religion against religion, or class against class, or school against school.

In some distant day, the dawn of which can only be seen by the prophet's eye, the eye of faith and hope, men will learn that what is true of one nation is true also of the whole of the nations which we call mankind. They will learn that just as to oppose one part of the body against another is to injure it or to destroy it, just as strikes or labor wars, in setting one class against another, injure the social body, so wars between nations injure that mightiest body of all which we call humanity. But this will not be learned until statesmen and soldiers and churches give up fighting for themselves and care only for those whom they profess to serve.

We have now learned the great truth that civilization and human progress depend upon human variety. This has the tremendous meaning, which no nation has yet realized, that, instead of taking all our children and giving them all the same education, we must find out what each child is best fitted for, and we must educate him for that.

WHY EVERY CHILD SHOULD BE EDUCATED FOR THE THING HE CAN DO BEST

The great reason why education is such a failure is not only that we set about it, as a rule, in altogether the wrong way, but also that we think we have merely to do something like making a number of coins out of metal by stamping it with dies, as they do at the Mint. But as two children may differ from each other certainly not less widely than a nerve-cell and a red blood-corpuscle differ, it is plain that if we give them exactly the same education, however skilful and devoted we are, we cannot be doing the best for both. The mightiest reform of education in the future—a reform which will help to make the new earth of men's holiest

and truest dreams—will depend upon our realizing that all children are different, and that the best for the child and the best for mankind is to find out what the child is best fitted for, and to educate him for that. More generally and worthily stated, this means that for the self and for society alike our duty is to develop as nearly as possible towards perfection the special nature of each child.

Of course, there are certain things which every human being, just because he is a human being, ought to know and ought to be able to do. Everyone ought to be able to read and write, for we are all social products and producers of each other, and reading and writing are the great instruments by which we affect each other, by which the wisdom of the dead benefits us, and by which our wisdom, if we have any, will benefit and mold and live in the far distant future when we are dead.

HOW A NATION'S STRENGTH DEPENDS UPON THE LIFE OF ITS CHILDREN

But it is another thing to say that all boys learning to read should read the same things. One is interested in science, another in poetry, another in mathematics, another would prefer to read books only for necessary purposes, while he would love to read the face of Nature—the sky and the soil. Why should we try to make a bad clerk of him when he might be a splendid farmer, taming the light and the soil and the water and the breeze to his will, making food for the life of himself and his nation? But this also is a great subject and would require many volumes to deal with fully.

As we go on thinking about a nation we shall see that there is one fact which is more important than all others. It is that all the individuals which make up this living being—the nation—die, and yet its life persists. This brings us to the great truth which stares us in the face, and yet which not one person in millions has really seen, that the destiny of a nation depends upon its parenthood and childhood. It depends partly upon the number of children that are born, partly upon their quality, and partly upon the care that is taken of them. Part of this great truth is already known and acted upon in some places.

THE NEXT STORY OF OUR OWN LIFE IS ON PAGE 562E.



SHAKESPEARE

The Book of MEN & WOMEN



MILTON



WRITERS OF OTHER LANDS

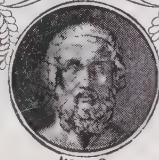
THE foremost poet of antiquity was

Homer. It is probably about three thousand years since he flourished in Greece. The story of his two great poems, the "Iliad" and the "Odyssey," is told on page 73. For ages scholars have learned the language of ancient Greece, so that they might read in the original tongue those books and other compositions of the Greek writers who lived before the time of Christ.

Ancient Greece may be described as the mother of the civilization of the west; her writers were pioneers of everything that is beautiful in thought, imagination, and expression. Homer's poems are in large measure descriptive of the legends that were born from the lively imagination of an ancient people, tales of fabulous adventure and the war-like deeds of men and gods; for to the Greeks there were many gods, and actual men who had once lived were often believed to have become gods after they had disappeared from earth.

Homer himself is something of a legend, for we know almost nothing about him. Seven different towns of Greece contended in ancient times for the honor of being his birthplace. Tradition says that he went about in public places reciting the poems he composed; that when he died and

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HOMER

was buried he was worshipped as a hero. The Greeks named one of the months of their calendar after him, and for ages his poetry was an inspiration to them. He sang in praise of heroism, and invested manly courage with the beauty of golden words. His was the voice of an heroic age, and we cannot read his poetry to-day, even translated into our own tongue, without feeling that we are reading the work of one of the world's great men.

The next great writer of Greece, who has been called the "Father of History," lived nearly five hundred years after Homer, and was born about 490 years before Christ. His name was Herodotus, and he was a native of a famous town in Asia Minor, called Halicarnassus, which was a Greek colony. Perhaps it was due to the fact that he was expelled from his native town by a tyrannical ruler that he became a great traveler.

He wandered into many countries, eastward as far as Persia, and visited Egypt and the colonies which the Greeks had founded on the north coast of Africa. Everywhere he went he was interested in the people he met and the things he saw, and he wrote down accounts of the different peoples and their countries

JULIUS CAESAR

HERBERT SPENCER

based upon his own observations and on what he was told. In this way he compiled the histories of many ancient wars, and descriptions of towns and nations that had disappeared long ages ago, and of which we might have known nothing but for his travels and investigations. He wrote these histories in a pleasant, unaffected, familiar style, which makes them alive with human interest; and though it has often been doubted whether his stories were to be believed, many of his most extraordinary statements have since been found to have at least some element of truth.

It is thought that Herodotus died about 425 years before Christ. A very old tradition says that he died in Thurin, or Thurium, a town in southern Italy which he had helped to found as a Greek colony some years before.

Rome had become master of the world, when Publius Vergilius Maro, whom we know as Virgil, was born near the Italian town of Mantua, on October 15 of the year 70 before Christ. The Romans were now the all-conquering people, the warrior race of the world, but their culture and learning they had taken almost entirely from Greece.

VIRGIL, THE AUTHOR OF THE "ÆNEID," THE FIRST OF THE GREAT LATIN POETS

Virgil went to Rome as a young man to study, but as his health was weak, and he lacked the confidence necessary for a speaker, he gave up thoughts of public service, and, returning to his country home, devoted himself to the study of the Greek poets. He achieved great fame by a series of pastoral poems modeled on the Greek poet Theocritus, and was befriended by the celebrated Mæcenas, the rich patron of all the poets of his day. Seven years of his life he devoted to his next great work—a series of four poetic books entitled "Georgics," which may be rendered in English as "The Art of Husbandry," dealing with all aspects of country life. These appeared in the year 30 before Christ, and established his fame as the greatest poet of his age.

The remaining years of his life were devoted to the writing of the great Latin epic poem known as the "Æneid," which it is thought he undertook at the suggestion of the Emperor Augustus, in order to glorify the legendary founder of

the Roman nation, and the royal house from which the emperor was descended. Æneas was one of the mythical heroes of Greek legend, a Trojan prince who escaped from Troy, as told in Homer's "Iliad," and it was Virgil's task to show how he had been the founder of the Latin nation. The story of the "Æneid" is told on page 76. Virgil died on September 21, 19 years before Christ, at Brindisi, in Italy, as he was returning from a visit to Athens, where he had met the Emperor Augustus.

VIRGIL'S FRIEND HORACE, ANOTHER GREAT POET OF ANCIENT ROME

One other poet of the ancient world must be mentioned. This was Quintus Horatius Flaccus, whom we know as Horace. He was born in Italy on December 8, 65 years before Christ, and died in Rome on November 27 of the year 8 before Christ. The father of Horace was a freedman, who had been able to send his son to Rome and afterwards to Athens for education.

It was at Athens that Horace was fired with thoughts of liberty, when he listened to a speech delivered by the famous Brutus, and he fought at the battle of Philippi, when the murderers of Cæsar were defeated by Antony and Octavian. He fled from the fatal field, and was afterwards glad to accept the patronage of those against whom he had fought, for in his poverty he turned to the writing of poetry, and Virgil, who admired his work, brought him to the notice of Mæcenas, whose brimming purse was at the service of the poet, and made him comfortable for the rest of his days. He received from this wealthy minister of Augustus a farm on the lovely Sabine Hills, not far from Rome, and in his poems he often sang of the delights of his pleasant life there.

DANTE, THE GREAT ITALIAN, AND HIS WONDERFUL POEMS

As Rome began to decline and, at the beginning of the fifth century of the Christian era, ceased to count as the greatest power in the world, the arts of literature and learning, which had been cultivated in her great days and carried on from the older times of Greece, almost went out in Europe, and centuries passed before they revived. It was in the same fair land of Italy that the revival took place. What is known as the "Italian Renaissance," or re-birth, was heralded

GREAT POETS IN THE HALLS OF PRINCES



Here we see Virgil, the great Latin poet, who wrote the "*Æneid*" to glorify the Emperor Augustus, crowned with the laureate's wreath and seated in the house of Mæcenas, the wealthy minister of Augustus, while Virgil's friend and fellow-poet, Horace, recites one of his own beautiful poems to that great patron of the arts.



To show his respect for Molière, the great French dramatist, who flourished in the age of Louis XIV., the king invited Molière to dine with him, while all his courtiers stood around, and thus did homage to the actor-dramatist, whose fame endures when the artificial honors of these French nobles have all been forgotten.

by the great poet Dante Alighieri, who was born at Florence in May 1265.

Dante took a prominent part in the life of his native town, but in January 1302 he was banished for his political opinions, and later was condemned to be burned alive if he could be captured. Henceforth he was an exile from his native city. He wandered from one friendly town to another and finally settled at Ravenna, where he died on September 14, 1321.

THE EXILE OF DANTE AND THE EARLY DAYS OF PETRARCH

When his great poem, "The Divine Comedy," was written, we do not know for certain. Of his ways of life we know but little, but what we do know is that this wonderful poem is one of the world's most precious treasures, and displays the great learning of the poet in the most varied branches of knowledge, expressed in language of majestic beauty. It is also notable for the vision it gives us of a strangely idealized love, for the inspiring force of his poem was the undying affection he had conceived for a lovely Florentine lady, Beatrice Portinari, whom he saw when he was a boy, but who died in early womanhood without knowing what a pure flame of devotion she had awakened in the heart of the strange, sad Dante. He had been married for twelve years and had a family of seven children when he was banished from Florence. He never saw his wife again.

At the time that Dante was exiled from his native town, a fellow-citizen, named Petrarca, was also banished, and two years later a son was born to him in his exile. Francesco was the name given to the boy, who was born at Arezzo on July 20, 1304. When he was eight years of age, he accompanied his father to the court of the Pope at Avignon, in France, for at that time the seat of the Papacy had been removed from Rome to Avignon. Later he went to Bologna, in Italy, to study law at its university.

WHY PETRARCH WAS GIVEN A PALACE IN THE LOVELY CITY OF VENICE

Petrarch, as we call him, was twenty-two when his father died. He then returned to Avignon. There he studied for religious service, although some say he never became a priest. His mind was of a very religious cast, and he devoted much of his time to traveling

among the churches and monasteries and seats of learning, searching for old manuscripts and also writing poetry.

Petrarch was, indeed, the second great figure of the Italian Renaissance, a man of genius whose gifts were recognized widely, and who was honored by all the scholars then keenly alive to welcome any thinker of worth who arose in that day of renewed literary activity. His poems are among the most beautiful gifts that have come to us from the Middle Ages. Like his great forerunner, Dante, Petrarch had also a love romance, and a lady named Laura was to him what Beatrice had been to the writer of "The Divine Comedy."

As the greatest scholar and poet of his time, he was sought after by kings and princes. The city of Florence asked him to go back to the city of his fathers, but he preferred to lead the life of an independent student and declined. We do not know that he ever met the poet Dante, but he was a friend of Boccaccio, another great Florentine poet. Petrarch lived in several of the cities of northern Italy, and in the course of his life and wanderings he collected a large library, which he presented to the Republic of Venice some years before his death. He died near Padua, on July 18, 1374.

GIOVANNI BOCCACCIO, THE GREAT STORY-WRITER OF THE MIDDLE AGES

The third great figure of the Italian Renaissance was a person very different in character from Dante and Petrarch. Giovanni Boccaccio was born, possibly at Florence, in the year 1313, the son of an Italian merchant. His father wished him to be a merchant, but, as he proved unsuited to that life, he was sent to study church law, or canon law as it was called. After a time he gave up this calling also. He went to live in Naples, and there began to write stories both in verse and prose, and enjoyed the luxury-loving life of that town as well as the pleasures of Florence, where many of the great people lived like princes. His stories were amusing, fresh, and unlike any others that had been written before. They were full of warm, human feeling, bright with humor, and ingenious in their ideas. They were too free in their manners, but in this he only reflected the manners of his age.

With Boccaccio the whole modern art of story-telling may be said to

have taken its rise, and he is better remembered and admired for his prose tales than for his poetry. He died on December 21, 1375, at the town of Certaldo, where his father had been a merchant.

We pass over nearly two centuries now, and look to Spain for the next great figure with whom we are concerned. Miguel de Cervantes Saavedra was the high-sounding name of the Spanish writer whom we know simply as Cervantes. He was born in 1547, and died on April 23, 1616. He was not twenty-two when he wrote some pieces on the death of the queen of his land. In the same year was in Rome in the service of a cardinal, but soon enlisted as a soldier.

THE ADVENTURES OF CERVANTES, THE SPANIARD WHO WROTE "DON QUIXOTE"

Cervantes took part in the famous battle of Lepanto, where his left arm received injuries that rendered it useless for the rest of his life. But, despite this, he saw more fighting, was engaged against the Turks in Tunis, suffered five years of slavery under the Algerian pirates, and had many other adventures before he was done with soldiering.

Cervantes was nearly forty years of age when he married, and sought to support himself by writing for the stage, as he had already shown his literary power in a pastoral romance entitled "Galatea." His plays must have been fairly successful, for he wrote between twenty and thirty, of which only two are now preserved. In 1594 he was appointed collector of revenues for the kingdom of Granada, but three years later was imprisoned, owing to a shortage in his accounts. It is said, but it may be only a tradition, that it was while in prison he wrote the first part of the book by which his name became immortal, "Don Quixote," the story of which begins on page 901.

It is to the writers of the fair land of France we now must turn, and the first there to engage our attention was living at the same time as Cervantes.

MONTAIGNE THE FRENCHMAN, WHO IS FAMOUS FOR HIS ESSAYS

Michel Eyquem de Montaigne was surely an extraordinary boy, for until the age of six he spoke nothing but Latin, and every morning he was roused from sleep by the strains of soft music!

He was born on March 28, 1533, at his father's castle in Perigord, and when only six was sent to a college at Bordeaux, where he remained for seven years, and received the best education his time could offer. One of his tutors was a celebrated Scotsman, named George Buchanan, who was a professor at Bordeaux. The boy was studying for the law, but between the ages of thirteen and twenty-four we know almost nothing about him. Then he appears again in Bordeaux, in a public post, and fills the position of a city councilor there for thirteen years.

During this time he married the daughter of one of his fellow-councilors. His father died in 1568, and as his two elder brothers were dead he succeeded to the family estates. Three years after he went there to live and spent the remainder of his life as a country gentleman of leisure, traveling often to foreign lands for his pleasure and instruction. It was in this leisured life that he began the writing of the essays for which he is famous, and there is, indeed, no pleasanter reading in all French literature than the charming little papers which he wrote as the mood came upon him, discussing all sorts of subjects and expressing his opinions in the most agreeable and elegant style of language. On September 13, 1592, he died at his castle in Perigord.

MOLIÈRE THE ACTOR, WHO WAS THE GREATEST OF ALL FRENCH DRAMATISTS

We have passed another century, and are in the Paris of Louis XIV., "the Grand Monarch," as he was called, when we make the acquaintance of the next great writer of France, Jean Baptiste Poquelin, known under his stage name of Molière. What Shakespeare is to England, Molière is to France. Unsurpassed as a writer of comedy even by Shakespeare himself, Molière is still the lesser dramatist, because he could not sound such depths of passion as Shakespeare does in "King Lear."

Molière was born in Paris on January 15, 1622, the son of a well-to-do furniture-dealer, and studied for the law, but early in life embarked on a theatrical venture, which, though it failed, made him an actor for the remainder of his days. He performed with his company in the provincial towns, and was fortunate in

receiving the patronage of the powerful Prince de Conti, who is said to have been his school-fellow. Later on he went to Paris where Louis XIV. took him under his own patronage, and gave him a theatre.

Molière spent the rest of his life in Paris. He had his own company of actors, for whom he wrote his famous comedies, and generally took a part in his plays himself. He was taken ill while playing in "The Imaginary Invalid," and died at his house in Paris on February 17, 1673.

Françoise Marie Arouet was the real name of another great Frenchman who could write plays and novels and poems and histories equally well. He called himself Voltaire, and probably no writer in any age ever exercised a greater influence on the mind of his generation. He was born at Paris on November 21, 1694, and, like Molière and so many others, first studied for the Bar.

VOLTAIRE, THE GREAT PHILOSOPHER OF FRANCE IN THE EIGHTEENTH CENTURY

Of an intensely cynical and satirical turn of mind, Voltaire's earliest writings were in the form of lampoons, or attacks on public men, for which he suffered imprisonment in the Bastille, but afterwards he made his way at court, and by sheer force of his powerful personality made the whole of Europe listen to what he had to say.

Portraits and statues of Voltaire are very familiar in Paris to-day, and his little, sharp-featured, shriveled face, in which there is always the suggestion of a cynical smile, is a good index to the writings of the man. He was quite lacking in reverence, but marvelously clear-sighted, when he sought to expose to men the folly of many of their accepted ideas.

Some of his histories and his plays show extraordinary knowledge, and he has always the power to make us think, even if we do not think with him. He was eighty-four when he died at Paris on May 30, 1778.

ROUSSEAU, THE FRENCH PHILOSOPHER, WHO WAS A WATCHMAKER'S SON

A great contemporary of Voltaire, and a curiously perplexing character, was Jean Jacques Rousseau, who was born at Geneva on June 28, 1712. He came of a French Protestant family, but led a very stormy youth, and turned

Roman Catholic. There is nothing very creditable in his early life, and many of his adventures were of a dismal and unprofitable character. In 1753 he wrote an opera, and soon made friends among the rich and leisured of that age, against whom the terrible fury which later burst forth in the French Revolution was slowly gathering.

He wrote a novel, called "Emile," that made him famous, but is no longer read, as the ideas expressed in it were peculiar to his time. His writings did not a little, however, to help forward the cause of liberty, which was finally to triumph in so terrible a fashion not many years after he was dead. In England he stayed for some time as the guest of the great historian David Hume, but, being of a quarrelsome and unsettled disposition, he could not keep friends. He returned to France, and lived in and near Paris for the rest of his life. But his mental illness increased and there is a suspicion that his death in 1778 was caused by his own hand.

None of the writers we have been considering had written anything in the same class as the great romances which are among the chief treasures of modern literature. But there was born at Besançon on February 26, 1802, the son of a French general named Hugo, who enriched the literature of France with works which will never die.

HUGO AND DUMAS, THE MASTER WRITERS OF FRENCH ROMANCE

Victor Marie Hugo, as he was called, was educated at Paris and Madrid, and when only a boy of fourteen he produced a tragedy. Poetry and romance were the passion of his life, and he enjoyed the highest honors which the favor of the public can confer upon those who entertain them with the magic of story-telling and great poetry. Such thrilling romances as "Les Misérables," "Nôtre Dame," "The Toilers of the Sea," the story of which begins on page 4223, and many others, fascinated the public of his day, and will be read so long as romance has power to enthrall us. He also wrote many plays and poems, but to understand their greatness, and enjoy their beauty you must read them in French. Hugo was also eminent in the public life of his time, and was banished, for his political opinions, for some years, during which he lived in the island of

Guernsey. But it was at Paris he died, on May 22, 1885. This great son of France was laid to rest in the Pantheon at Paris, where his tomb is visited by people from all parts of the earth.

Living at the same time as Victor Hugo was another writer, whose life was as romantic a story as any he ever wrote. Alexandre Dumas, the renowned author of "Monte Cristo," was the son of a republican general, and his grandmother was a black woman, so that he was a quadroon. He was born in the north of France on July 24, 1802, and his early life was not particularly profitable, but, having a taste for writing, he spent some years in study, and then began the most amazing career of any writer in history. Stories of all kinds—romances, plays, books of travel—flowed from his pen in a stream that seemed to be inexhaustible. Never had any one man showed such fertility of imagination, such ingenuity of invention, such boundless energy.

The fact was that Dumas was not only a genius, in whose mind revolved endless ideas for tales and romances, but he had the power to touch with his own individuality the work of others, and lesser writers worked with him from time to time as his assistants.

Dumas was kind-hearted and prodigal, and he had no sooner made a fortune than he contrived to get rid of it, so that when he left Paris for the last time, in 1870, and went to his son's villa near Dieppe, he was practically penniless. He died on December 5, 1870. His son wrote many novels and plays, and, taking a warning from his father, was very careful with his fortune.

GOETHE, THE MOST FAMOUS POET AND PHILOSOPHER OF GERMANY

From France we pass now to Germany, where, as culture had blossomed later than in the more western part of Europe, we do not find great writers until a later day. The first of world-wide fame is named Johann Wolfgang Goethe, who was born on August 28, 1749, at Frankfurt-on-Main. He studied at the University of Leipzig, and later at Strassburg, and, in common with many literary men of all lands, was trained for the law. But he soon left that profession to devote himself to literature.

Poetry and the romance of legend attracted his mind most. By degrees

he began to shape his thoughts into poetic form, and attempted the writing of plays and songs before he was twenty years of age. Through the study of other poets and the old ballads, such as Sir Walter Scott himself had rejoiced in, Goethe was first led to write about them as a critic, and later to produce great poems himself. The work by which his name is best known to American readers is "Faust," a great poetic drama which has been translated into most languages of the civilized world, and has thrilled the hearts and thoughts of generations. His life was filled with the most fruitful activities, his friendships with the great men of his day are memorable, and the influence of his thought on the mind of Germany has been far-reaching and permanent. In 1775 he was invited by the Duke of Weimar to go to that city and accepted the invitation. He made Weimar his home for the rest of his life, and for a number of years was very prominent in the state affairs of the Duchy. He died in the city of Weimar on March 22, 1832. Weimar is famous to-day because of Goethe, and because of the fact that the body of this great poet rests in the ducal vault beside that of Schiller, his friend and fellow-poet.

SCHILLER, THE GREAT DRAMATIC POET, WHO WROTE THE PLAY "WILLIAM TELL"

Johann Christoph Friedrich Schiller was the son of an army surgeon, and was born in Würtemberg on November 10, 1759. He, too, became a surgeon to a Würtemberg regiment, but early began the writing of plays, and had one produced in 1782. The Duke of Würtemberg acted very tyrannically towards him, and prohibited him from writing other plays, as those petty dukes of Germany were able to do at that time. So Schiller fled from the duchy and wrote his plays elsewhere, and finally found himself at Weimar. His works have earned for him the position of the foremost dramatic poet of Germany, and perhaps his play that is best known to American readers is "William Tell."

Numerous versions of his poetry are to be found in English, just as with Goethe, and lives of him have been written by many authors, the most famous being that by Thomas Carlyle. His life was a long struggle against poverty, and he died at Weimar on May 9, 1805.

**THE GREAT RUSSIAN WRITERS OF
THE NINETEENTH CENTURY**

The Russian writers do not as a rule interest young people very much. Gloom and darkness, as we know, take away our bravery and make us faint-hearted, and most of their books are full of dark, gloomy thoughts that are not natural to the high courage of fearless youth.

The best known of the Russian writers, and the one whose work will live, is Leo Nikolaievitch Tolstoy, a Russian nobleman, and a great writer.

Tolstoy was born in 1828 at Yasnaya Polyana, a beautiful country estate in Russia, which belonged to his father, and on which he lived the greater part of his life. He was unfortunate enough to lose both his father and mother in his childhood and was partly brought up by an aunt whose influence over him was not very good. He had no one to guide him in his youth, and went from one thing to another before he discovered what his life work should be. First he studied Oriental languages, next he studied law, and after that he went into the army and served in the Caucasus and the Crimean War. While he was serving in the army he began to write, and he wrote such wonderful descriptions of the siege of Sebastopol that his genius was quickly recognized.

From the Crimea he was sent to Petrograd with a dispatch, and at the emperor's desire, he did not go back. While he was with the army, he had become interested in the serfs who composed the rank and file of his regiment, learned to sympathize with their unhappy lot and take their part. It was at this time that the movement to set them free began, and without waiting for the Czar's decree, Tolstoy set free all the peasants on his own estate at Yasnaya Polyana, which he had inherited from his father. Then he set himself to teach them, and went abroad to other countries to study what seemed to him to be the best systems of education.

All this time he wrote constantly, and continued to write throughout his life, and his work is so good that he is looked upon as one of the world's great writers. He wrote a number of long novels, some of which you will want to read when you grow older, and several books on philosophy. He lived to be a very old man and died in the year 1910.

It is difficult to say what the work of this man of genius would have been if he had lived in a happier country. It is certain that he was influenced by the unhappiness of the life around him. His work has had a great influence not only on the life and thought of his own country, but on the thoughts of literary men in every country into whose language his books have been translated.

There are, of course, many other Russian writers, such as Ivan Turgenyev, Fiodor Mikhaylovitch Dostoyevsky, the poet Alexander Pushkin and the dramatist Alexander Ostrovsky, whose books you will want to read when you grow older. Alexander Pushkin, who wrote the fine poem Boris Godunov, with which some of us are familiar as an opera, is called the greatest Russian poet; but unfortunately poetry loses so much when it is translated that the beauty of his poetry is almost sealed to English-speaking readers.

**A GREAT BELGIAN WRITER WHOM
ALL CHILDREN LOVE**

Maurice Maeterlinck is a Belgian writer whom all children like because he wrote "The Blue Bird," of which you will find the story on another page. Maeterlinck was born in the famous old city of Ghent in 1862, and was educated first at a Jesuit school and then at the university of his native place. At the university he studied philosophy and law and became a lawyer, but soon followed his natural bent toward literature. He has written many plays besides "The Blue Bird," and a number of books on philosophy, besides poems and essays. Everything that he writes has an exquisite charm, which unhappily it loses largely when it is translated, and if you really want to enjoy his books you must learn to read French well. His best known books are "The Blue Bird," "The Life of the Bee," and a play called Pelleas and Melisande. "The Life of the Bee" is written like a beautiful story.

**TWO NORWEGIAN WRITERS WHOSE
FAME IS WORLD-WIDE**

Norway has given us two great writers in the poet Björnson and the dramatist Ibsen, most of whose work has been translated into English. Bjornstjerne Björnson, who was born in 1832 and died in 1910, was the greatest story writer and poet that his country has known. After he left the University of Christiania,

he commenced life as a newspaper writer, but in a short time began to write dramas, which soon gained attention. To help him to gain time for his chosen work he was made director of the theatre at Bergen, and was sent by the government to study in Italy, France and Germany for three years. At the end of that time he went back to Norway, and with the exception of time spent in traveling, he lived there for the rest of his life.

He wrote many novels, plays and poems, most of them about the life that he saw around him in his own country, or about the heroes of the old sagas. One of his chief objects in life was to stir up a feeling of national life in Norway. He did not think that Norway ought to be united to Sweden and his writing helped to bring about the separation between the two kingdoms, which took place five years before his death. His books give us very fine pictures of the Norwegians of his time.

Henrik Ibsen, who is much more widely known than Björnson, was born in 1828 and died in 1906, so that they may be said to have lived at the same time. He went to a scientific school at Skien, his native place, then was apprenticed to a druggist. Afterward he went to the Christiania University, with the idea of becoming a physician; but he had already begun to write plays and he decided to devote all his time to literature. For a time he was stage manager of the theatre at Bergen, and the salary from this post enabled him to live while he wrote his first great drama. He was then made director of the theatre at Christiania, but he was not successful as a business man.

After his failure in the management of the theatre, he devoted himself entirely to literature, and his articles and essays in newspapers and journals attracted a great deal of attention, and his fame became world-wide. Then years of his life were spent abroad. He was a guest at the festivities which were held when the Suez Canal was opened, about which he wrote a poem, and he traveled about in Europe a good deal. Afterward he went back to Norway and settled down in Christiania, where he lived for the rest of his life. Like Björnson, Ibsen wrote almost entirely about Norwegian life. He hated wrong; but he had the mistaken idea that the way to make things better

is to keep thinking about the things that are not right. His plays and stories are very tragic, although there is also much beauty in them, and most of his characters are very selfish.

Although they wrote their books in the form of plays and novels, the work of both of these writers deals chiefly with the science called psychology, with social science and with political science.

SOME OF THE ITALIAN WRITERS OF OUR TIME

The same thing may be said of the great Italian writer, Gabriele d'Annunzio. Few of d'Annunzio's books, however, have been translated into English, and for that reason they are not much read by English-speaking people. Of late years he has turned his attention to stirring up the national spirit of his countrymen. Some of his poems are of great beauty.

Perhaps because we look upon Italian as the language of song, or because Italians have only begun to come to this country of late years, we do not usually think of them as serious students, scientists or fine writers. Nevertheless, they are all three, and besides d'Annunzio, the work of a number of Italian writers deserves mention.

One of the best known of these Italian writers is Edmondo de Amicis, who has written a number of very interesting books of travel, which have been translated into English. Giuseppe Giacosa was a charming writer of poetry, who died in 1904, and there are a number of dramatists, such as E. A. Butti, and Roberto Bracco, whose plays are very well worth reading.

One of the most famous Italian writers is Guglielmo Ferrero, the historian. Ferrero, whose father was an engineer, was born in the city of Naples in 1872, and was educated partly at Pisa and partly at Bologna, where he met his wife, Gina Lombroso, a daughter of Cesare Lombroso, a famous psychologist. He has written several books on the history of Rome, which have been translated, and some other books which deal chiefly with history.

TWO SWEDISH WRITERS WHO HAVE GAINED FAME

Of August Strindberg, a Swedish writer, who was born in Stockholm in 1849, we shall only speak because he is famous and you ought to know something of his life, which has been very sad be-

cause of mental illness. His books reflect the gloom in which he has lived and consequently they are not true pictures of life.

Strindberg went to the University of Upsala, but, like many American boys, he was obliged to work his own way, and had to leave it for a while to teach and earn some money. When he had done this he went back and finished his university course.

After he left the university he found a place in the Royal Library and it is interesting to learn that he studied Chinese so that he might be able to catalogue the Chinese manuscripts. During his years at the university, and while he was at the library, he wrote essays and stories and plays, and also wrote for newspapers, and when he had established his reputation as a writer he gave up all other work to devote himself to literature. None of his books is of interest to young people.

It is refreshing to turn from all this sadness to the writer of the "Wonderful Adventures of Nils," "Gosta Berling's Saga," "Jerusalem," "Matilda Wrede" and other books written by Selma Lagerlof, who is also a Swede.

Like Strindberg, she was for some time a teacher and it was while she was teaching a school at Landskrona that she wrote her first book, "Gosta Berling's Saga." Her books are so good that the Upsala University made her a doctor of literature, the Swedish Academy gave her a gold medal, and in 1909 she was given the Nobel prize in literature, an honor which Björnson had also received.

A FRENCHMAN WHO WROTE FUNNY STORIES

Alphonse Daudet, a French writer whom we have not yet mentioned, is of especial interest to readers of THE BOOK OF KNOWLEDGE, because he is the author of "Tartarin of Tarascon," the story of which is told elsewhere. He was born in 1840, at Nîmes, where his father tried to carry on the business of a silk manufacturer, but failed. Daudet was educated at Lyons, but had to leave school early, and at the age of sixteen became an assistant teacher in a school at Alais. A boy of that age, however, had small chance to keep order among a number of other boys, and in about a year he gave up the attempt and went to Paris, where he began to write the stories for which he is famous,

and obtained employment on the great newspaper Figaro. Afterward he was made a secretary to Charles Morny, who was very powerful in the reign of Napoleon III, but he did not try to play any part in the politics of his time. The happiness of his later life made up for the sadness of his boyhood, but he unfortunately fell into ill health and died at the age of fifty-seven.

SOME WRITERS OF SPANISH BOOKS

When we turn to modern Spanish literature, we find very little that has been translated into English. Although we do not often hear of them, however, many Spanish books are of great interest, especially those which deal with the manners and customs of Spain. One of the men who is best known for such stories is Pedro Antonio de Alarcon, who was born at Guadix in 1833 and died at Madrid in 1891. His life was not a very long one, but it was crowded with activity. During the fifty-eight years that he lived, he was by turns a newspaper publisher, an editor, a war correspondent, a statesman and an ambassador, and all the while wrote novels, essays and stories. He is best remembered for his collection of stories of Spanish country people, called "Historietas nacionales," "El Sombrero de tres pecos" and "El mino de la bola."

Juan Valera y Alcalá was born in 1824 at Cabra, in the province of Córdoba, and was educated at the University of Granada, where he studied law, as a preparation for work in the diplomatic service of his country. He had a long and eventful life. First he saw service at the courts of Naples,—which was then a little kingdom,—Portugal, Saxony, Russia, and in Argentina, so that he had the advantage of seeing a great deal of the world. After a time he went back to Spain and went into politics. After Alphonso XII, the son of Queen Isabella, became king, Valera again went into the diplomatic service, and toward the close of his life he was made a senator. During all these years he continued to write novels, stories, and poetry, and also translated into Spanish some of Goethe's poems, and a number of poems by American writers. His best known book is "Pepita," which has been translated into several languages.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5409.



A GENERAL VIEW OF A GOLD MINE

THE EARTH'S HIDDEN TREASURE

"AS good as gold," we say when we wish to speak in terms of high praise. We can think of no substance given to us as more valuable than gold. Gold will buy anything which is to be sold, because all nations have from the very earliest ages regarded it as the most precious of metals. The possession of gold makes the meanest man powerful; the lack of gold may make a great man weak. By the aid of gold we can do enormous good; by the misuse of gold we may do enormous harm. Men sacrifice their lives in the honest attempt to get gold; men commit grave crimes in the dishonest attempt to get it.

What is this all-powerful metal? Where does it come from? It is a metal dug out of the earth, just as lead, and iron, and tin are. For ages upon ages men called alchemists tried to make this metal, which a child may find in the soil. They spent their own fortunes and the fortunes of other people, and ruined their lives and died heartbroken or mad, in the hopeless attempt to convert less valuable metals into gold. Yet gold was to be had in the soil of nearly every country. It had been hidden in the earth by Nature, a buried treasure, and may be found

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by any diligent seeker, or stumbled upon by the fortunate. We find gold in rivers, in dry land where once rivers ran, and in rocks.

There is gold floating in the seas around the American coast to-day. Though the work is not very profitable, a few men make a living by extracting the gold from the waves which wash the shores of part of Australia. Gold is found in the sands of some of our rivers, and in the water of hot mineral springs. So we cannot say with certainty whether gold came originally from the inside of the earth or from the waters which cover the greater part of the world. Probably some of it comes from the earth, and some from the waters. But, whatever its source, there it is, Nature's surprise-package for man, a free gift to the lucky and the industrious.

We know where gold has been discovered; we know of what gold is composed; we know that it is, like iron, and lead, and tin, one of Nature's precious gifts to man. But how it came into the soil and rocks—how it was formed—we do not know. We find gold embedded in rocks which were created in the earth's hot interior, and feel disposed to say, "Oh, all gold has been formed in the

fiery heat of the earth's internal furnace." But that will not do, for the reason that gold is also found in great rocks which have been beyond doubt formed by the seas depositing mass upon mass of sediment.

The gold mine is not like a field which can produce a new harvest every year; we dip into it like a bag, and it is soon emptied. The mines that are worked by one generation become exhausted, and the next has to look for others, so that the hope of finding gold has been one of the greatest causes for the discovery of new lands.

The earliest centres of gold mining were among the peoples who first became civilized, the Egyptians, Persians and Babylonians living in North Africa and Western Asia. The legend of the Golden Fleece about which you read in another volume probably arose from the method of collecting gold-dust by allowing the water courses of Colchis to run over the skins of sheep. Croesus, King of Sardis, and Midas, King of Phrygia, were so rich in gold that their peoples said of them that they could change everything they touched into gold. From the tombs of the Egyptians beautiful golden ornaments have been recovered. In the British Museum you can see the jewels of five princesses who were buried more than two thousand years before the birth of Christ, and those of Queen Aah-Top who lived nearly a thousand years later.

After the mines around the eastern shores of the Mediterranean were exhausted, the wild tribes living in Spain, in Gaul, and in the Alps were the next who possessed much of the precious metal. The Gauls were accustomed to decorate themselves with it even in battle, but Rome had no gold mines till she expanded towards the Alps. As she gradually took possession of the world her wealth increased more and more. There came a time when the precious metal abounded in the city, when gold was freely used to make massive statues and to gild the ceilings of rooms, and an Emperor's wife showed herself in public dressed in a tunic made of plaited gold threads. But wild tribes overran the Roman Empire, and the gold was scattered and disappeared. They ceased working the ancient mines, and for centuries Europe was very poor in the precious metal.

With the discovery of America at the end of the fifteenth century, gold began to flow into Europe from Mexico, Guiana, Peru, and the treasury of the Incas. At the same time, Africa was sending gold-dust, which was patiently gathered in the interior by the unpaid labor of negroes. For two hundred years the production of gold continued to be very great. Then it began to grow less, for all the known mines were exhausted and it was time for geographical expansion to clear the path once more. For a little time, finds in Russia and Siberia—new countries both—helped to keep the scale up.

There is considerable gold in the eastern United States, but in the middle of the nineteenth century the "gold cry" sounded loudly from California and from Australia. Because of the amount of gold found in both places, and the gold-digging fever which the finds caused in every part of the world, a new "gold age" set in. From California, solitary and venturesome miners went east, south, and north to lands unknown but rich in hope. These found such full reward in Nevada and in Mexico that a crowd of diggers, like an army of gamblers, grew with every tale of newly-made fortune.

As in North America, so it was in Australia. In 1851 the rush, which occurred towards this little known land, caused towns to spring up like mushrooms, almost in a night. Large areas, hitherto known only to the wild dog or the kangaroo, were in a short time peopled and settled by gold-seekers from every land.

In the Russian Empire, too, though the discovery caused less sensation, gold was found in considerable quantities in unexplored areas of Siberia. It was principally these three countries, Australia and North America and Russia, which produced almost all the gold of this time.

In 1896 rich gravel was discovered in a district in Yukon called Klondike on the Canadian side, and later on the American side. A wild rush to this region, which is very difficult to reach, followed. Nearly 3000 miners from all parts of the world came in the next four years. Some of them made fortunes, others of them lost all they possessed. They worked the deposits with such fury

that the richest gravels were exhausted before 1910.

Almost the same thing happened to Africa in the nineteenth century as had happened to America in the fifteenth. Africa was not discovered in the actual sense of the word, but it was explored. And with exploration came the discovery of gold. And, curiously enough, the discovery was not made in those parts of Africa which had been known for centuries to send their gold down to the coast. The gold of Africa came neither from the Gold Coast nor from the country of Kong, where it was said that the negro kings used to sit on a throne of gold. It came from a country far to the south, a land so little known as only to be called the country beyond the Vaal River, the "Transvaal." From its one great deposit, the Witwatersrand, which was discovered in 1887, and is only 31 miles long, has come a great pile of gold every year.

At the same time when Africa was giving us so much, a discovery was made in West Australia of a similar kind, that of Coolgardie from which comes over fifty per cent of the state's yield. And Nome, Alaska, was the scene of a great stampede in 1900.

Since about the year 1500 it is reckoned that 18,200 tons of gold have been extracted from the earth. Yet the quantity that we have been able to get is, in reality, whatever be the depth of our mines, only from the very surface of the globe, and a very thin outer coat of the earth's crust. We do not know whether gold may be found in greater quantities in regions nearer the centre. Man is learning to explore the heights of the air, and it is possible, in spite of greater obstacles, that he will gradually succeed in days to come in sounding some of the mysteries of the depths of the earth.

We learn much of the past history of the world in our quest of this rich gift of Nature to man. We find it in the beds of streams and rivers which run far from their original course. It has been washed there, along with masses of material of what once were mountains, worn down by rain, and wind, and frost, and heat. The bulk of the material has been borne away by the current of the water, but gold, being seven times as heavy as the material in which it is contained, has sunk into the beds of the

rivers, and remained to be eagerly sought and found by men centuries and centuries after it last moved.

Then we find gold in dry land, where once a river was. Big nuggets are discovered in these places. One, called the "Welcome Nugget," weighing nearly 185 pounds, and worth more than \$50,000, was discovered over fifty years ago in this way by poor men seeking fortune in South Australia. No such masses of gold as this are found in the rocks. There it is found in veins, and the rocks have to be blasted and crushed to release it.

The strange thing is that gold which has been carried by water in past ages may be found on hill-tops, far from any river. Ages ago, the river carrying the ruins of still older hills, gold and all, flowed over newer hills, cut down through them, formed a valley, and wore away a course at the foot of the hills, leaving the gold to become embedded in the rocks crowning the peaks, which the water left unhurt. And then, with the progress of the ages, the rivers have carved entirely new courses for themselves, so that they run now at right angles to their old beds. To the ancients gold was the most precious of metals, because, to them, the most rare of all. The truth is that gold is not more scarce than copper, tin and lead; and is *more plentiful* than nickel, cobalt, platinum, and other rare metals. But it has special values. A little of it goes a very long way—in working, just as in spending. A single grain of gold can be beaten into a gold leaf fifty-six inches square, and the gold which the gilders use, called gold leaf, is so thin that 280,000 sheets of it, laid one above another, measure not more than an inch in height. Pure gold is nearly as soft as lead, yet a grain of it can be drawn into a wire 500 feet long; while gold wire only sixty-five thousandths of an inch thick will actually hold up a weight of no less than one hundred and fifty pounds.

A wonderful metal is this gold, which Nature has stored for us so carefully in the rocks, and soil, and sea, and riverbeds of practically all the countries in the world. The pictures that follow show us some of the methods employed to extract this precious metal from its hiding-places, and also give us some idea of the appearance of the mining districts.

WASHING OUT THE GOLD FROM THE SOIL



Gold is found in nearly every part of the world, and it is estimated that during the last four centuries gold worth nearly ten thousand million dollars has been obtained from the earth. Some has been dug out of mines and some washed out of the soil. The simplest way of getting gold is shown here. One man is washing the gold-bearing soil in a pan, so that the heavy grains of gold may sink and be collected, while another is washing out the gold in a "cradle." The rough wooden trough is called a sluice-box, for washing gold on a larger scale.



Washing the gold from the surface-soil in which it is found is now done by machinery and is called piping, or hydraulicking. Great jets of water are played upon the soil, as shown in this picture, and the water washes the earth or gravel away, leaving the grains of gold. Much gold, however, is washed away and wasted by this process, and it is now forbidden in California. In three years, the Californian goldfields produced gold worth 180 million dollars, and in an equal period the Australian fields produced no less than 300 millions.

AN OPEN WORKING AND A DEEP MINE

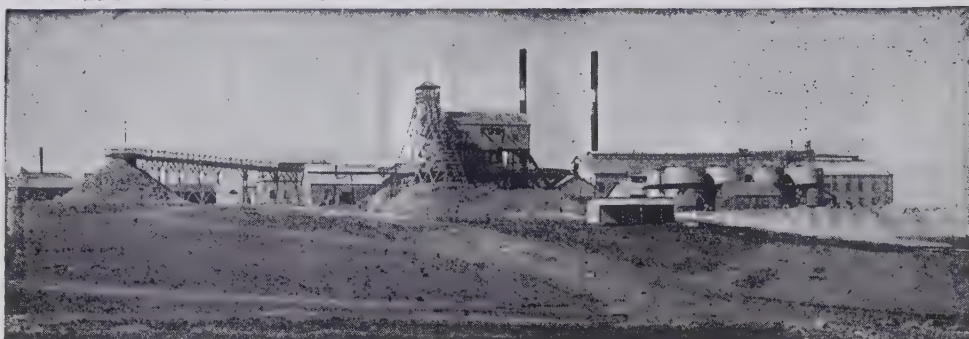


Besides being found near the surface, where it can be washed out, as we see on page 5320, and deep down so that a shaft has to be sunk, gold is also found a few feet below the surface, when it is known as an open working. It is interesting to realize that many towns in South Africa, America, Australia, and New Zealand would never have been in existence to-day but for the discovery of gold in the districts where they have been built.



It has been estimated that from the time when gold was discovered in South Africa, until the time when it shall all have been taken out of the earth, the value of precious metal extracted will be about 75 hundred million dollars. Most of this will have come from underground workings like the one we see here, and in years to come this vast mining district will be like a giant honeycomb. Some workings are a mile below the surface.

WHAT THE TOP OF A GOLD MINE IS LIKE



Gold-bearing soil is really gold ore that in the course of centuries has been broken up by the weather. When the gold is all washed out of this, if the rock below has veins of gold or contains rich ore, mines are sunk and the ore is brought to the surface. This picture shows us the great works built at the surface of a gold mine.



The tower-like structure built over the shaft of a gold mine contains the machinery for lowering the miners and raising the ore. When the ore is brought to the surface it is crushed, and then the gold is washed out.



In this picture of the top of a South African gold mine we see the rush of water from the works, where it has been used to separate the gold from the crushed rock. A good water-supply is essential in gold-mining.



This is another view of the works at the top of a large gold mine. Very large nuggets of gold are never found in the veins of mines, but only in surface beds, and some think that in the **course** of ages they have grown large by gradually attaching to themselves smaller fragments. The largest nugget ever found was the Welcome Nugget, discovered in 1858 at Ballarat, in Australia. It weighed 2,217 ounces, and was sold for \$52,000.

THE MEN WHO DIG FOR THE GOLD



Here we see the little homes, or bungalows, of the engineers and other white men employed at a big gold mine in South Africa. These bungalows are strongly built. When, however, gold is first discovered in a new district, miles away from any houses, the miners who rush to the spot have to sleep in rough sheds or in the open air.

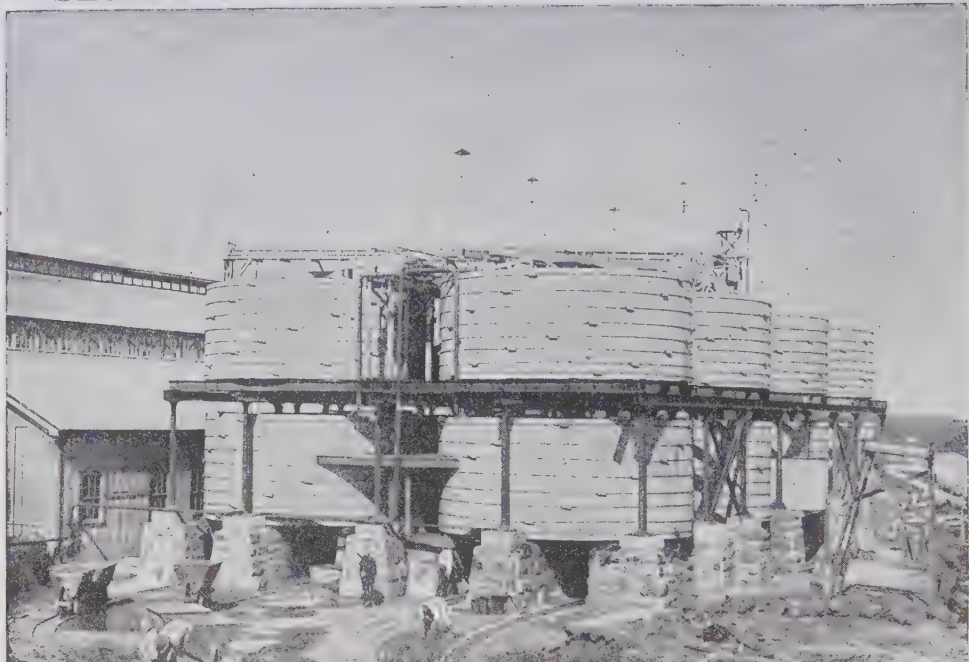


In the South African gold mines nearly all the digging underground is done by Kaffirs. Although, as we can see from the picture, they are mostly grown up, they are always called "boys" by the white men in authority over them, whatever age they may be. These black men wear scanty clothing when working in the mines.

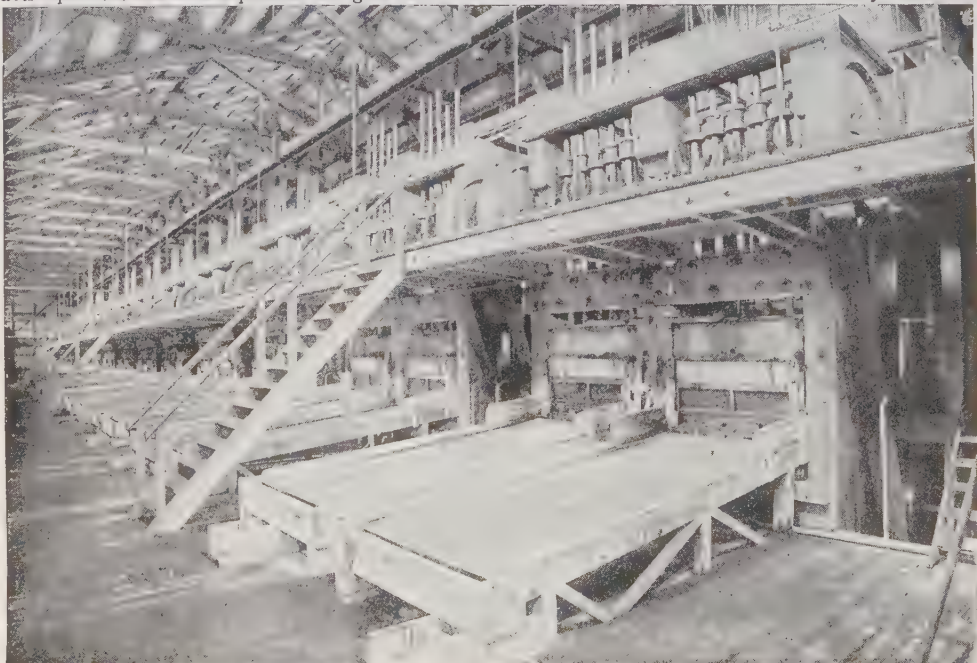


The black men, or Kaffir "boys," all live in a place by themselves, which is called a compound. The houses are built in the form of a square or oblong, while the space in the centre is left open. Thousands of Kaffir boys are employed in digging for gold in South Africa, and, when properly looked after, make good workmen.

SEPARATING THE GOLD FROM THE ORE

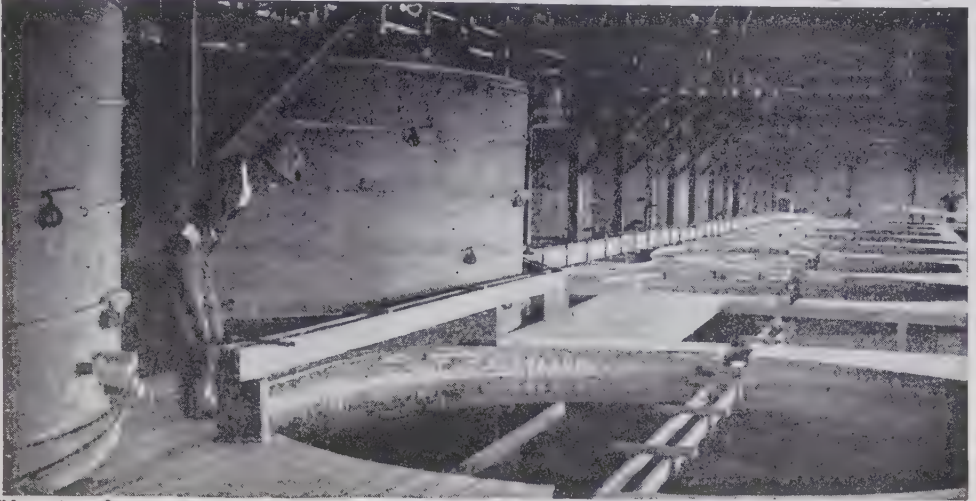


Two men invented a new process for obtaining the gold from minerals in which there were only very small quantities, and this process is now used in nearly all the South African mines. It is known as the cyanide process. The finely crushed ores and other materials are put into large vats, like the ones seen in this picture, with a poisonous chemical called potassium cyanide, which is used a great deal in photography. The chemical acts upon the ore and separates the gold from the other substances so that it can be easily collected.



The rock containing the gold is very hard as it comes from the mine, and after it has been crushed small it is reduced to the finest powder by machines called stamps. Here we see some of these stamping-machines. Iron hammers strike the ore with great force and crush it. The powder is then passed through a fine sieve and the gold collected. The hammers weigh nearly half a ton each, and strike ninety blows a minute.

THE GOLD LEAVES THE MINE FOR THE MINT



More than \$150,000,000 worth of gold is now produced from the South African gold mines in a year, and to obtain this from the hard ore very expensive machinery is needed. In this picture we see what are known as precipitating vats, in which, by a chemical process, the gold is separated and collected. Of course, there are many other operations which the ore has to go through before the gold is actually set free and ready for use.



This is the smelting-room of a mine. Smelting, which simply means melting, is another method of extracting the gold from the ore that contains it.



This picture shows the chemists of a gold mine assaying, or discovering by chemical tests, the proportion of gold that exists in a particular kind of ore.



When the gold leaves the mine for the Mint it often starts on its journey in mule wagons. The amount of gold found in mines and goldfields all over the world each year is worth about \$440,000,000. More than half of this is obtained in the British Empire, a fact which has partly helped to make England such a very rich country.

The photographs on these pages are by H. W. Nicholls, Underwood & Underwood, London, and the Consolidated Gold Fields of South Africa.

THE NEXT STORY OF FAMILIAR THINGS BEGINS ON PAGE 5414

THE WONDER HOUSE OF NEW YORK



From Harper's Weekly, copyright, 1897, by Harper and Bros.

This is a picture of the Natural History Museum of the City of New York as it will be when it is all completed. At present, although the whole block of property belongs to the Museum, only the front and the left and centre wings have been built. The exhibit of archaeological and natural history objects is perhaps the finest in America, and whole weeks could be spent with profit in studying these great collections.



Here is the hall containing exhibits of the archaeology of Mexico and Central America. Many of these great stone monoliths which we see here were found on the sites of the ancient Maja towns of Honduras, buried in the undergrowth of dense tropical forests. On these shafts of stone we see the prehistoric picture records that tell of a people that inhabited America long before the advent of Christopher Columbus.



The Fine Front of the Museum of Natural History.

THE MUSEUM OF NATURAL HISTORY

A VISIT to New York is not complete unless you have seen the Museum of Natural History, one of the most interesting places in the whole city. Once you have been there, you will want to go again and again, and each time you will come away with your mind stored with some new and beautiful bit of knowledge.

In the first place it is not in the least like our ideas of an old-fashioned museum, where everything is put in uninteresting glass cases, and you have to turn to the pages of a catalogue to find out what they are. To be sure there are glass cases, but they are glorified cases that frame the objects they enclose. To each a clear description in large print of the bird, or animal, or other object, is attached, and even a rapid walk through the halls makes us feel as if we are walking through the pages of a fascinating book, in which the pictures have suddenly become alive. Its pictures help us to understand many books, and our favorite subjects become doubly interesting after we have paid a visit to this wonderful place and have seen how strange birds and animals look at home.

For instance, we will suppose that

CONTINUED FROM 5018

you have been reading stories of Indians, and life on the plains, when they were the grazing grounds of the buffalo. How much more interesting these stories will be after you have seen a real tepee, with life-sized Indians sitting about in it, and how real the stories of buffaloes will seem after you have seen a herd feeding on a real bit of the Texan plain, with a buffalo path across the corner. You forget that the Indians are wax figures, and that the buffaloes are stuffed, so lifelike do they seem.

As you go about the halls you will remember all the things that you have learned, and the gaining of knowledge will never seem dull again. Rare birds in their native haunts, with stones and trees about them and a painted background that you can easily think is real, make nature study almost too easy.

In another place you will find birds' nests with the parent birds on the branches beside them. You will find animals in the surroundings in which they lived. Snow-white arctic bears climb about on snow-covered rocks; hyenas look as if they had taken their color from the sand on which they stand; beavers are busy

beside the lake that their dam has made just as if they were alive.

WHERE WE MAY SEE INDIANS AND ESKIMOS

Four large halls are devoted to Indian life. As you go through the door, you can scarcely wait to look at the large meteorites inside it before you press on to see the Indians, of whom you catch a glimpse through the open door beyond. The life of the Indians of the Pacific Coast is shown in the long Central Hall. The canoe that you have seen through the doorway is a huge dug-out in which a party of Indians are going to a feast called the "potlatch," during which they will give away all they possess in honor of the memory of the dead. The man who is standing at the stern of the canoe is the medicine-man, who is going to direct the ceremony. The canoe, which is sixty-four feet long and eight feet wide, was dug out of the trunk of a single tree. It is a good seaworthy boat and will hold forty men.

Against the walls and down the sides of the hall there are cases in which you will see the grotesque-looking totem poles and house poles made by the Indians of British Columbia and Alaska, and in the cases there are specimens of the fine blankets woven by the Chilkat Indians, the baskets for which the West Coast Indians are famous, the masks used in religious ceremonies, and many other interesting things.

At the end of the hall you go into a smaller hall, in which you will see the home life of the Eskimo. In one group, an Eskimo woman is cooking blubber over a stone lamp; in another a woman is fishing through the ice. The fur clothing of these people is shown, and so also are their implements and their carving in bone and ivory.

When you leave the Central Hall, turn to the right through the Entrance Hall, to find more Indians. Here there are three large halls devoted to the life of the Indians of the Woodlands, of the Plains and of the Southwest. In these halls you will find fine wampum belts, stone weapons, rude agricultural implements, wooden and birchbark vessels, wooden trays and spoons. In the hall where the tepee stands there is also a model of the earth-covered houses in which some tribes of the Plains Indians lived, and in the next hall there are models of the

cliff dwellings, and of the pueblos of which we have read in the story of Arizona, and some beautiful Navajo blankets.

WHERE THE LIFE-STORY OF TREES AND ANIMALS IS SHOWN

On the same floor there is a very fine collection of the wood of American trees. Each tree has been cut so that you can see the bark, the grain of the wood when it is cut in boards, and the rings which show its growth. With each specimen there is also a spray of leaves and flowers and a spray of fruit and leaves so that the whole life of the tree may be studied. One of the most interesting things in this hall is a cross-section, or slice, of a redwood tree, or sequoia, which was more than a thousand years old when Columbus discovered America. The great trunk was sixteen feet in diameter, and there are pins set in the section to show how large it was at different epochs in the history of the world.

Passing through this hall we come to a most interesting collection which shows the development of life in the world, as we know it, from the tiny amoeba, the lowest form of life, up to man. Some of the minute animal forms of life are shown by exquisitely made models in glass or wax, made much larger than the originals so that we may be able to see them. Some of the models are the size of a man's hand, with pale tinted tendrils as fine as a hair, which in their natural size can hardly be seen with the naked eye. In the marine collection there are such fascinating things as sea stars and sea lilies, corals and sponges. Life under the sea is shown, and you can study the shellfish, crabs and lobsters of which you have read, as they appear in their native haunts. You remember that we have told you of the life of the mosquitoes which cause malaria and yellow fever. Therefore you will be interested in the models of this insect which show its growth from the tiny larva to the full-grown insect.

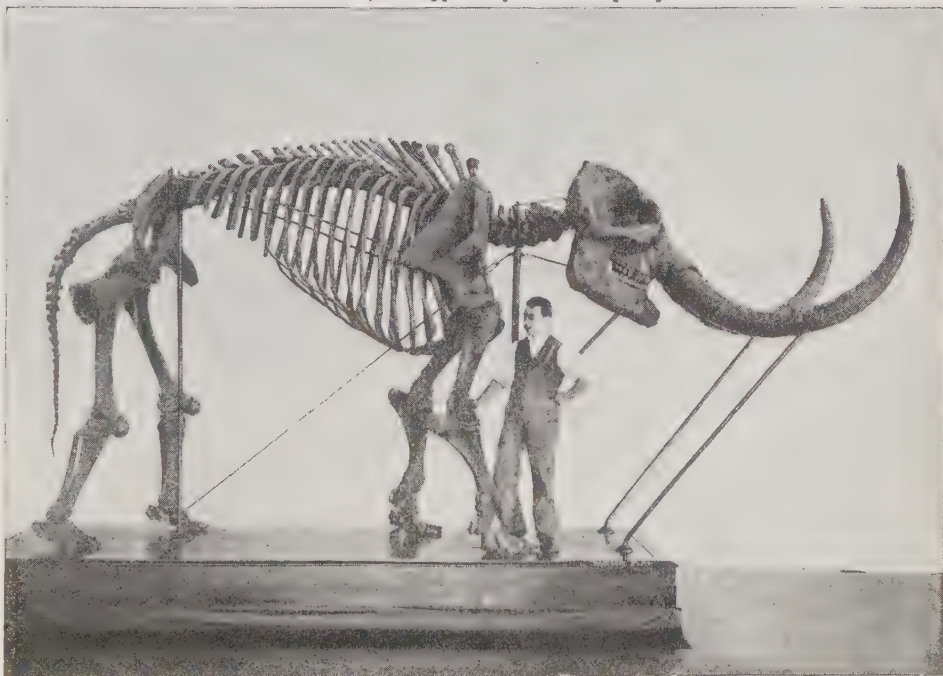
THE WONDERS THAT WE MAY SEE ON THE SECOND FLOOR

On the next floor you will find snakes, and lizards and salamanders, cases of birds, nests and eggs. Further on, on the second floor, the life of the Mayas, of which you may read in the story of Central America, of Porto Rico and of the Mexicans, before they were found by the Spaniards, is shown. Mexican books teach us that the Mexicans had invented

THE STORY OF THE MASTODON



This is a picture of the giant mastodon as he looked when he wandered through the woods of North America about the time that man appeared on the continent. Like the horse, these animals mysteriously disappeared from America, and no one can tell the cause of their disappearance. Like the elephant, they lived on grass and the bark and leaves of trees, and apparently there was plenty of this food to be had.



This skeleton of a mastodon, now in the Museum of Natural History, was found within fifty miles of the city of New York, where it had been buried for perhaps more than a million years. The man beside it shows its comparative height. If, as some suppose, primitive man exterminated the mastodon, he must have lain in ambush for the lordly creatures, which could have crushed him as we would a moth.

writing, and here we may see a copy of the calendar stone of which there is a picture in this book. Maya sculpture tells us that the Mayas, of whom until lately we have known so little, knew of art, and tells us how far these people had gone in a civilization of which we know nothing.

From this hall you reach another in which you may study the long, slow progress of man from early times. The first rude weapons and implements made by man are shown. Copies of the pictures which the cave men made in the caves of Europe are here, and some of the pictures that these early men made on bone and ivory. In another room beyond there are copies of cave paintings made by the Bushmen of South Africa, some of the looms that they use in weaving show how they make their cloth, and there are specimens of the cloth itself and of garments made from the cloth, in the cases.

Perhaps you have wondered if the stories we have told you of the work done by the negro peoples of South Africa could possibly be true. You will no longer doubt it once you have seen their process of manufacturing cloth, the work of their blacksmiths in axes, knives and spears, that is shown in the African room, and the beautiful ivory work in trumpets, axe and knife handles, trays and boxes. Some of the ivory is finely carved, and you wonder why the people who can do such things have still remained a savage people. In this room we shall also find many of the animals found in Africa, including a beautiful specimen of that strange animal, the okapi, of which you will see a picture elsewhere.

On this floor you will find the birds of the world. A dodo built up from a skeleton and copied from a Dutch painting will interest you. Ptarmigan in snowy-white winter coats; orioles, scarlet tanagers, blue jays, soberly dressed song birds, birds of Paradise, snowy-white cranes, and hundreds of other birds are all shown here. Beyond these are the fishes, and then comes the Hall of North American mammals.

In the hall devoted to these animals you will find moose from Alaska and New Brunswick, the buffaloes or bison and the beavers and seals of which we have already spoken. Caribou, musk ox, and all the smaller animals are shown in something like the surroundings in which

they live. On the floor above you will see the gorillas and orang-outans—the most man-like of the apes—and other apes and monkeys.

BIRDS THAT LOOK AS IF THEY WERE ALIVE

On this floor, too, you will find one of the most beautiful places in the museum, the hall in which the groups of American birds are placed. When you look into the cases in which the birds are kept, you will find it hard to believe that you are not looking through a window at an actual scene. Each case is built up to look like the scenery in which the birds actually live. The man who is in charge of this department of the museum traveled 60,000 miles so that he might make this collection. Artists went with him to make drawings of the places in which the birds were found, and from these drawings models were made and pictures painted. The illusion is so perfect that you can scarcely tell where the foliage and trunks of trees or the rocks in the foreground end, and where the painted picture begins. The group that shows bird life on Cobb's Island, Virginia, is so real that we almost expect to get a whiff of the salt sea-air. In the foreground is the white, shell-strewn sand, with its straight tufts of grass, and the sea gulls hovering about. Beyond are the piled-up clouds, and the gray-blue sea breaking in lines of foam as the tide rolls up on the beach.

WHERE YOU MAY PICTURE THE LIVES OF THE INCAS

If you have been reading about the Incas of Peru, you will be interested in the hall given over to South America. Here there is a curved stone chair in which an Inca may have sat. There are beautiful cloths woven of cotton and llama's wool, and embroidered by the hands of women who had been laid to rest long before the Spaniards came. Here you will find the spindles that held their wool and cotton; the neat work-baskets used hundreds of years ago, the copper needles with which the embroidery was made, the simple looms on which the cloth was woven; there are fine pottery jars and silver vessels which bring vividly before us the lives of those strange people who had worked out a wonderful civilization of their own.

Beyond this you will find the collection which represents life in China before Western civilization began to change con-

THE CHILDREN AND THE ANIMALS



Every Thursday afternoon a lady gives little talks to children in a sunny, cheerful room on the second floor of the building. These children's classes have large attendances and the boys and girls are very enthusiastic over their work. Here they learn to draw and paint and model birds and animals, and to work in basketry and pottery, and bit by bit in their play-work they learn the character and the habits of the creatures of the air, and stream, and field and forest. This class is making a study of Indian work.



Here we see a group of pronghorn antelopes, perhaps one of the finest mounted groups in the Museum. They have been made to appear just as they do when they march in single file across the plain. The herbage which the animal on the left appears to eat is made to look as much as possible like their natural food. People who can never hope to see wild animals in their native haunts learn a great deal about them from such groups as these.

All pictures in this story by courtesy of the American Museum of Natural History.

ditions there, and the life of the people who inhabit the east of Siberia.

In one of the eastern halls on this floor you will find more animals. A curious platypus, from Australia, is of great interest, and hares changing from white to brown show us how this curious phenomenon progresses. Still more interesting is the model of a huge sulphur bottom whale which hangs from the ceiling in the centre of the room. This monster, which is seventy-nine feet long, is an exact model of a whale which was captured off Newfoundland.

The collection of insects, which comes next, includes most of those of which we have told you and thousands of others besides. There are cases of beautiful butterflies and moths, and a mourning cloak butterfly with folded wings, inside a hollow log, shows how a few of these fragile insects sleep through the winter months.

WHERE GEOLOGY IS MADE A FAIRY TALE

Perhaps you think geology is uninteresting, and the life of the earth dull and drab-colored. But suppose we go up to the fourth floor, to the hall that is devoted to minerals. Walk straight down the hall and at the end you will see a real cave, brought from Virginia. In one part of the cave there are beautiful pillars, in another the stone, of which it is made, looks like folded drapery, through which the light shines. Then you remember what you have learned about the action of water dissolving limestone, and depositing the salts in another place, and you know that this beautiful thing has been made by the action of water. Now let us walk across the hall, and there in glass cases we shall find specimens of malachite and azurite. You have always thought of malachite as a highly polished, very cold marble-like stone, but here you see something quite different, something that scarcely looks like a mineral. Some of the masses in the cases look as if they were covered with green velvet, others as if they were made of soft green moss; some of them look as if they were covered with grapes and in some of the pieces, the grapes are purple, powdered with green frost. There are exquisite tiny caves in the blocks, which look as if they had been made for halls for the fairies, and these little caves were made by the action of water on copper, just as

the larger caves were made by its action on limestone. The blocks of malachite were taken out of a copper mine like the mine of which there is a model in the corner of the hall, which shows how the mine is worked and the ore taken out.

Not far away you will find another hall which glows with the color of precious stones that catch and reflect the light. Here you will find crystals of royal purple amethyst, yellow amber and smoky topaz. There are lovely pearls and brilliant diamonds, and all the other stones of which we have told you in the Story of Precious Stones. More interesting still, perhaps, is the collection of crystallized minerals, in their rough state, which make you wonder at the beauty that is dug out of the earth.

LIFE AS IT IS LIVED IN THE PACIFIC ISLANDS

Beyond the Hall of Minerals you will find two halls that illustrate life in the Pacific Islands. In front of the door a Tahitian Fire Walker is walking over heated lava blocks; on one side of him a group is grating cocoanuts, on the other a group is weaving mats for a house. In the corner of the room, a Maori warrior breathes defiance against the world. In the cases there are royal feather capes from Hawaii, carvings in wood and stone and models of canoes, rolls of cloth and the looms on which it was woven. In another hall, life in the Philippine Islands is shown. A woman is weaving at a loom; near by there is a model of a Philippine house, and not far away another house is perched in a tree-top.

FOSSILS OF MONSTER LIZARDS THAT ONCE WALKED ABOUT

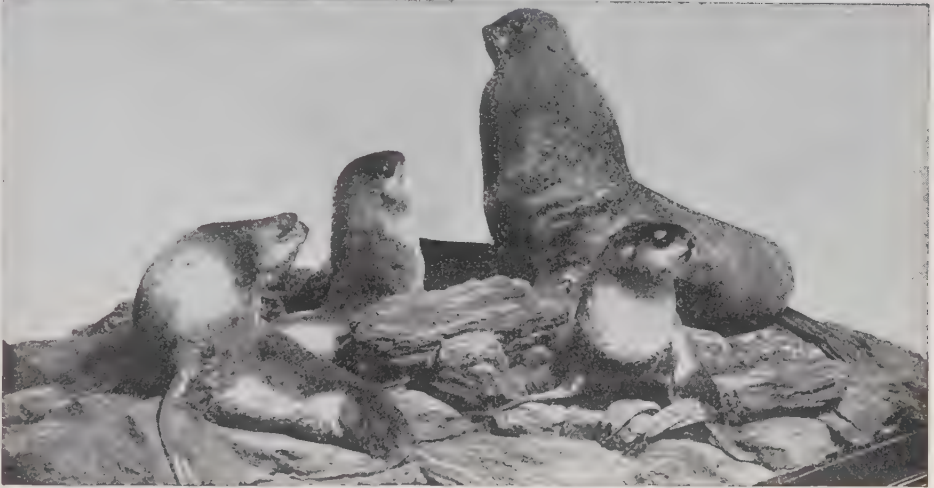
We have told you stories of the monsters that lived long ago on the earth, of great mastodons, of monstrous sloths, of great lizards. Here you will find the actual skeletons of the monsters themselves. There is a giant ground-sloth which, it is believed, some of the cave men of South America tamed long ago; a great sabre-toothed tiger gives us an idea of the terrors which confronted early man; mammoths and mastodons tower above us, and the skeleton of Jumbo is placed here so that we may compare him with his giant ancestors.

In the hall of fossils you will find the frightful saurians. The huge brontosaurus, which you will see on another page, is dreadful-looking, but it was a

BEASTS AND BIRDS OF LAND AND SEA



This lion is not lying on the sand, gazing out into the desert. It is a stuffed lion, but has been made to look so lifelike that it seems to be lying in a contemplative mood.



Here is a group of seals, such as you may read about in an article on the fur trade in another part of our book. They are made to look as much as possible as if they were alive on the rocks of the Pribiloff Islands, where they were captured. The background of the case is painted to look like the sea.



Perhaps one of the most interesting halls in the Museum is where the birds are shown in their natural surroundings. This is a scene from the Klamath Lake Bird Colony, showing white pelicans, California and Ring-Billed gulls, terns and cormorants, which all nest together on just such rush islets as this.

gentle beast that fed on water weeds, while the frightful allosaurus, and the still more frightful tyrannosaurus were carnivorous. These huge reptiles were not so large as the brontosaurus, but the allosaurus ate him up, and the tyrannosaurus ate the duck-billed dinosaur. These skeletons were taken from the earth, where they had been buried for millions of years, the bones that had fallen apart were put together piece by piece, like the sections in a puzzle, and they were set up here to give us an idea of how they

neys so that we might have the pleasure of knowing something of the birds and animals found in South America. All this work has been done so that we may have the pleasure of knowing about other places, and to make study easy and pleasant for us.

Children are always made welcome at the Museum, and thousands visit it every year. No matter when we go through this interesting place, we meet children everywhere, eagerly studying the things that interest them, and laying up stores



These dolls were made by Hopi Indians for use in their religious ceremonies and afterward became playthings for the children. The Hopi Indians live in pueblos, which are a sort of large apartment houses. The entrance is usually by ladders. The Hopis make pottery, weave, cultivate the soil, and raise good crops if the season is favorable. Picture by courtesy of the Museum of Natural History, New York.

looked in life three million years ago. One of the animals actually shows the skin with which in its lifetime it was covered. In another hall you will find skeletons of the horse, and you may trace his development upward from the tiny eohippus that fled from the giant tyrannosaurus in the room beyond.

All these things have not been brought together without much work. The man who arranged the American birds traveled thousands of miles in the time that he spent in studying their habits. Years were given to digging up the skeletons of the eohippus and other horses. Men have risked their lives in the tropical forests of Africa, and have made long jour-

of knowledge that will make their lives richer and fuller. To help children who cannot see to understand the things about which they read, classes are held for the blind, and the little ones are allowed to hold objects in their hands, and learn about them by the sense of touch.

This is not the end of what is done for boys and girls. Pictures for lantern shows have been made, and these are sent to teachers, in other places, who ask for them, to show them to their pupils. One might almost say that in this way the Museum brings its treasures to the children in distant cities and even in country places who cannot come to it.

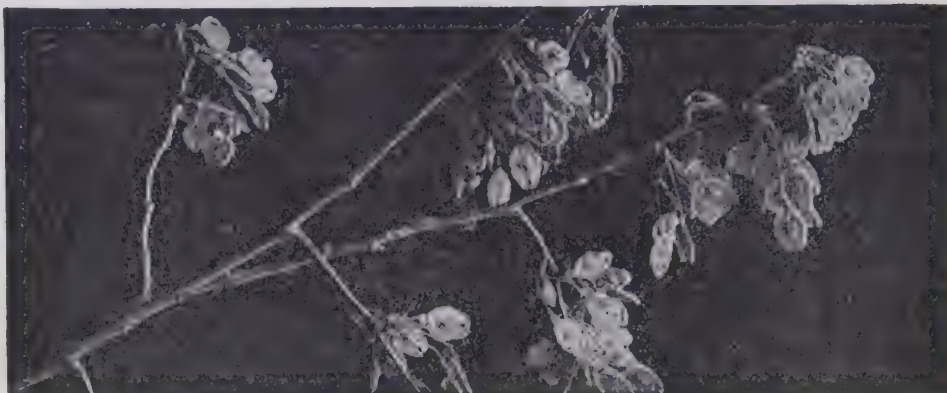
THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5491.

THE IROQUOIS INDIANS OF NEW YORK

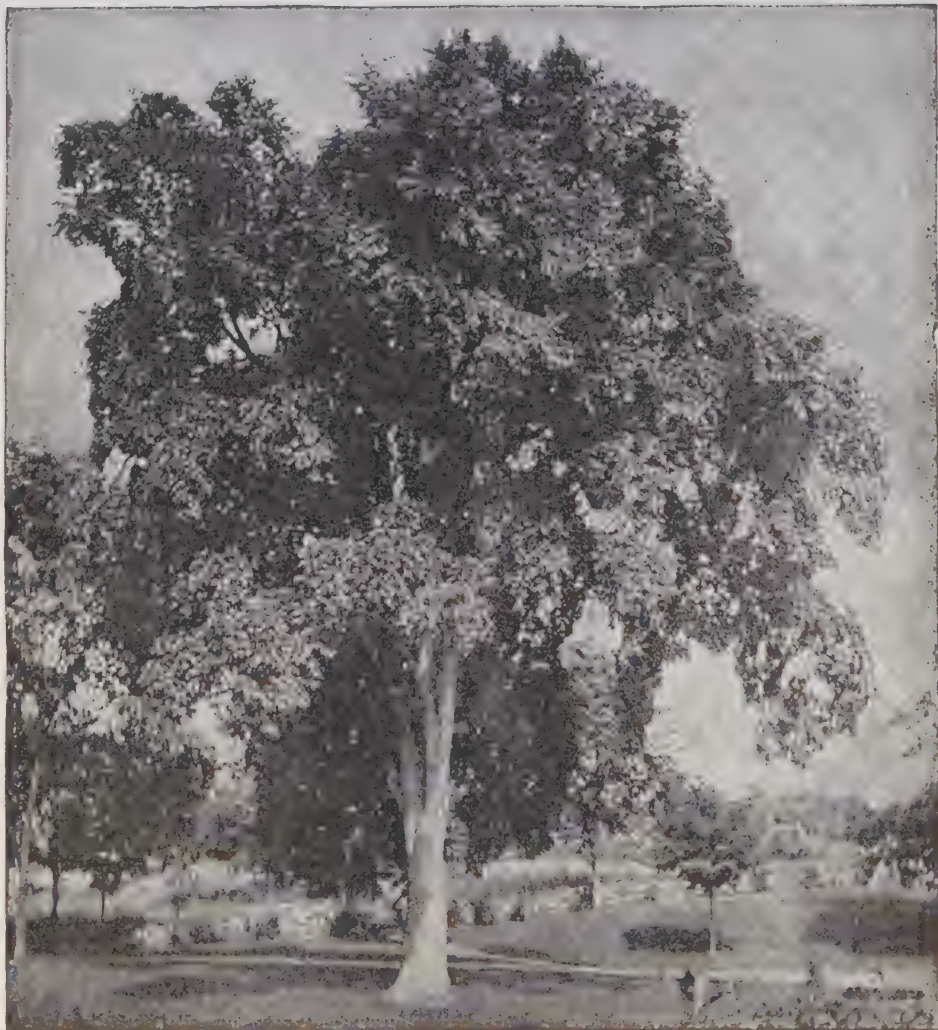


These are the Indians who used to live in New York long before the white man set his foot upon its soil. The first picture shows a warrior, scalp shaven, clad in hand-made, ready for the war-path. The second represents an Indian woman grinding corn to make meal from which she will bake small cakes. The dog, which we are gaining a lion, was the only animal found domesticated among the Indians. The third figure in this group shows an Indian medicine man, or priest. It is interesting to know that this particular group of Indians was prepared for the Hufschutler celebration held in New York to mark the hundredth anniversary of the first trip of the Clermont. The Iroquois lived in large wooden houses, which were grouped in villages. They knew how to rudely cultivate the ground and grow corn, from which they made bread.

THE AMERICAN ELM AND ITS SEEDS



THE LIGHT, FLAT SEED OF THE AMERICAN ELM



The American Elm is a magnificent shade tree with graceful, sweeping branches which give it an unusual appearance of lightness. This tree lives to a great age, and there are many noted specimens in the country, especially in New England. Compare this picture with the more compact English Elm on page 3260.



The Fruit of the Striped Maple, or Moosewood.

AMERICAN TREES IN SUMMER

OUR continent is so vast that the plant life in one corner in no way resembles that of another. Speaking in general terms, each corner, or desert, or mountain range, or river-bottom, or sea-beach has its own variety of soil and climate and a plant population that has fitted itself for ages to withstand the trials of life in that particular locality, be it large or small.

These great divisions of plant life are called "floras," and so distinct are they, except where they mingle on the border-lands, that skilled botanists say that if they were taken blindfolded on a magic carpet to any part of North America, by looking around at the plants, they could soon tell pretty nearly their whereabouts. If they should be dropped in a grove of the trees which we have pictured, for instance, they would be sure that they were in the northeastern part of the United States, and they might guess that they were within a hundred miles of New York.

Let us imagine that the botanist's carpet has descended in the scraggy branches of a sweet-gum tree; he would know that he was east of the Mississippi and not far north of the Hudson, at least, for the sweet-gum does not go much further in that direction. On

CONTINUED FROM 5238



the other hand, if he found the lovely little striped maple he would know that he must be north of Georgia, for this tree rarely travels further south. The odorous bayberry would warn him that he was near the coast; and tree after tree would add its evidence to help him to locate himself.

In this way we have come to think of certain trees, or groups of trees, as always to be found in certain parts of America. When we speak of the southeastern coast, we promptly remember the tufted palmetto; while the persimmon and magnolia, and the moss-draped live-oak are always present in our dreams of the Mississippi bayous; and of course we never forget the white pines of Maine.

But Canadians always remember the maples, for these trees grow so abundantly in their country that a maple leaf has been chosen as the emblem of the Dominion. They have many varieties of maple. One of them that we frequently read about in hunters' tales, is usually termed moosewood, because the moose love to eat its great, tender buds that are close-wrapped in crimson scales. It is also called the striped maple. Although it is rarely seen growing alone, it is readily recognized in the copses by its smooth

green bark, striped with white, and by its great, soft three-lobed leaves. It is almost a shrub when compared with the great red maple and the sugar-maples. The former is one of the first trees to turn its coat and warn us of the coming of winter, showing vivid patches of red here and there very early in autumn. The sugar-maple, on the contrary, is inclined to become golden, or pale scarlet, and often its foliage is mottled with both colors. While the red maple adorns itself with tufted, deep-red blossoms before the leaves unfold, the sugar-maple drops its tassels of honey-colored flowers beneath the newly opened foliage.

THE SUGAR-MAPLE AND MAPLE SUGAR

A well-grown field sugar-maple is a magnificent tree, shaped something like a pyramid, with solid-looking, dark foliage. Its leaves are very simply lobed with squarish divisions. Its pale-tinted wood is hard and very heavy, and as we all know, is made into hardwood floors, furniture and the like. It is especially valuable when the tree grows so that the wood has the appearance that we call "bird's-eye maple." "Curled" maple, which we get from both the red maple and the sugar-maple, is valuable also. But altogether the most interesting thing about the sugar-maple is the sugar! It is a small New England farm that has not a sugar-bush somewhere; and it is one of the pleasant duties of the farmer to go out in the snowy springtide, and by piercing holes in the bark of the sugar-maple, and fixing little spouts therein, to draw off the sap that is rising upward just under the rough bark.

The sap in this stage is colorless, thin and faintly sweet to the taste. By careful boiling the water in the sap is got rid of, and in time the liquid turns to sugar. The sugar-boiling is a time of gaiety for young folks, who frolic in the snow and about the huge bonfires under the sap-kettles, and eat maple sugar in every form they can invent.

The early settlers learned this art from the Indians, who made the sugar, and sold it, dark-brown and coarse and filled with bits of twigs and leaves, but nevertheless delicious, in little birch-bark boxes. Sometimes they took out the water from the sap by freezing it night after night, each morning throwing away the cake of ice that had formed and

which contained most of the water, leaving the sugary thick fluid. They even ate scrapings of the sappy, sweetish bark, as the Southern negroes chew sugarcane. Some Indians have a curious habit of putting maple sugar on their meat or in soup, instead of salt, which they do not like, as well as eating it as we do, on hominy or boiled wild rice.

THE HONEY-LOCUST—A HANDSOME TREE WITH FEATHERY FOLIAGE

Another sweetmeat for the Indian children was the pod of the honey-locust. This is a handsome tree that has traveled far from its original home in the middle west, and has spread widely its flattened top in many a park and highway. The leaves are composed of many small leaflets, among which the clusters of long, flat black and twisted pods are easily seen, especially as they stick to the branches during the winter. They are filled with a sweetish, watery pulp in which the hard seeds lie, and this is pleasant to the tongue. The honey-locust is distantly related to the acacias and mimosas about which travelers in African deserts tell us. We remember that they also speak of the vicious thorns that endeavor to protect the feathery foliage, but which the giraffe ignores when he reaches over the mimosa tops with his long neck.

Our locust, like them, is well armed with enormous spines, which are polished and branched, every spur being quite capable of stabbing to good effect. They appear in the most unlikely places on branches and trunk, often in groups. Unlike the common locust, the flowers are inconspicuous, but its trembling foliage, which scarcely casts a shadow, gives the tree a charming delicacy of outline. We may notice that the pale, little leaflets rise up as the sun sets and press their upper surfaces together. This is called their "sleep," and prevents the escape of heat from the delicate leaves at night, and also reduces the chance of injury from excessive coolness, heavy rains, and so forth.

THE MAGNIFICENT COLUMN OF THE TULIP-TREE

Some of our trees have leaves of so unusual a shape that if we once see them, we shall never forget them. Such are those borne by the beautiful tulip-tree, which one might describe as square in general outline, with a notch taken out of each

INTERESTING SHRUBS AND TREES



ASH

A hardy tree, which usually grows in moist soil. Its elastic tough wood is valuable for many purposes. The European ash has many other uses.



PIN OAK

A common eastern oak, readily known by its deeply cut, rather small leaves, and its drooping lower limbs. It is frequently planted as a park and street tree.

side and another at the tip. They have changed but little in shape since pre-historic days. Each leaf comes out of the bud folded upon itself, and within an oval case of translucent tissue. The tissue splits to let the swelling leaf come out, and the two halves remain at the base of each leaf-stalk for some time. The leaves of the tulip-tree tremble like those of the poplar, and the tree is often called "white" or "yellow" poplar. It bears very handsome flowers, on the tips of its upturned branchlets. They much resemble tulips in shape and are brilliant yellow, with a splashing of orange and pale-green at the base of the cup; the sap-green tone of the foliage about each flower harmonizes most charmingly with it.

This tulip-tree is one of the most magnificent trees in our forests. In the prime of life, if it has had sufficient moisture and room, it forms an almost perfect cone from the ground to its top-most spray. It is famous, moreover, for the height and unbroken straightness of its trunk, that rises like a column, no matter how shapeless and broken the head may become. This was observed by the Indians, who took advantage of it, and of the softness and lightness of the boles, by digging great canoes out of them. Carpenters usually refer to the lumber of the tulip-tree as "white wood" and it is a favorite material for finishing the interiors of houses, especially when the woodwork is to be stained and painted, for it is easily worked smooth and soft. Panels of carriages are also preferably made from it.

Even after the leaves drift away, the tree retains its interest, for it is then seen to be laden with countless cones of fruit. When ripe, we discover that the cones are formed by row after row of upstanding winged seeds; and on dry, sunny days, we shall find these seeds flaring in circles about the base of the little interior cone they have been overlapping. A stick thrown among them, or even a high wind, will send yellow clouds of the seeds to earth furiously twirling as they descend.

**THE INDIANS MADE THEIR CANOE
PADDLES FROM THE ASH-TREE**

Other winged, paddle-shaped seeds come spinning to their last resting place from the ash-trees. They are called "keys," and are gathered into great

bunches on the branches, which sweep outwards in an interesting double curve and bear leaves of several large leaflets.

There is little of the romance that is gathered about the European ash included in our folklore, but it is justly valued for the strength and toughness, and the elasticity of its wood, which the Indians used for paddles, finding the tree very handy, as well, since it frequently overhangs water-courses. Even nowadays oars are made of ash, as well as tool-handles, wagon-shafts and other parts of vehicles, besides many other things.

**THE LIQUIDAMBAR OR
SWEET-GUM**

Some of us may have seen "alligator-wood" sold on city streets and wondered what it really is. The irregular twigs, gray and crested with wavy ridges of a material like ash-colored cork, seem foreign and unlikely to grow in America; yet one can break them from trees within the limits of New York City,—trees bearing the sonorous Latin name "liquidambar," and the less romantic English title "sweet-gum." Both names refer to its resinous sap, which may be used in place of storax, an incense gum which we get from a relative of the sweet-gum, that grows in Asia Minor.

The liquidambar grows in Connecticut and southward to the Gulf of Mexico. In youth it appears to take a very slender, spire-like shape, but becomes less shapely as it ages. The leaves are cut deeply into several sharp-pointed lobes, and look like great green stars. In winter the ground beneath a sweet-gum is strewn with curiously spiked or horned balls that prove to be its fruit. A mass of two-beaked, hard capsules growing together like a sphere, is each fruit, and there is need of the number of them that we see swinging from the leafless twigs, for there are few fertile seeds in each sphere. It is a great forest tree. The wood takes a soft satiny polish, and is sometimes called satin walnut.

**THE PICTURESQUE OUTLINE OF THE
PIN-OAK**

One could write a whole book on the oaks alone of this country. We have already spoken of the white and live-oaks. In this story we shall speak of the pin-oak, one of the most easily recognized and picturesque of our eastern oaks, and one that is frequently planted

TWO HANDSOME FOREST TREES OF GREAT VALUE



CHESTNUT

The chestnut-tree is a fine forest tree which was formerly of great value, not only for its wood which is strong and easily split, but for its sweet nuts. Unhappily the chestnut groves are being destroyed by a fungus growth that works under the bark.



SUGAR-MAPLE

The sugar-maple often grows in rocky hillsides as well as in the woods. A well-grown, thickly-mottored standing alone in a field is a fine sight. Its dark foliage gives a gratified shade in summer. The hard wood is useful for many purposes.

in highways and parks, because it grows quickly.

In the forest it generally chooses moist or even wet soil; and when youthful it is a pyramidal little tree with thickly-set branches standing out horizontally all around the stem, and a maze of little branchlets and spiky interwoven twigs. But when older, the lower limbs droop until they rest dying and broken against the trunk, while the middle and upper limbs rise in an almost unbroken series of sweeping lines, which gradually change from the droop of the hanging lower



THE BUTTERNUT

The butternut or white walnut is nearly related to the black walnut, and gives one of the largest and richest of our nuts. The outer hull furnished the colonial yellowish-brown dye called "butternut."

limbs to the uprightness of the vertical leader at the top. The small acorns falling from their shallow cups are sometimes striped; the pretty foliage is deeply cut, often nearly to the mid-ribs. The wood is strong, hard and light-brown in color.

THE BUTTERNUT—A NUT-BEARING FOREST TREE

A ripe butternut must present a problem to the eager teeth of even a red squirrel. For, when it falls, it is enveloped in a sticky husk, and when

this disappears, it leaves a four-ribbed oblong nut two inches long, with a stony-hard shell, bearing thin, saw-edged ridges. All summer, at first soft and green, the butternuts have been ripening in clusters at the top of the branches, tucked in at the bases of the great leaves broken up into many leaflets that are not a whit too big for the fine tree that bears them. In early days a dye called butternut brown was made from this tree—some say from the husks of the nuts (which certainly stain the fingers) while others claim that the inner bark gave the tint which the colonists used.

Blooming under the wild red cherry are the straggling bushes of the choke-cherry, from which hang long clusters of luscious looking, scarlet berries, which will pucker the mouth and throat most amazingly. And near them will spring the butternut, which shoots up into one of the handsomest of forest trees. It is not often that one can reach the furred twigs, with their sticky half-opened leaves composed of many pairs of long pointed leaflets, and an odd bud at the tip; whence, in early spring, hang tassels of the stamen-bearing flowers, like green catkins. Other flowers hold the pistils, ready to catch pollen; and long afterwards these flowers develop into nuts with sweet, rich kernels.

Before that, we are told, Indians smashed the kernels and stirred them in water, making a buttery liquid, from which the name arose. The tree is also called the white walnut, from its likeness to its cousin, the famous black walnut, but its wood is soft and light and much paler in color than that of the black walnut, although it looks like it when stained properly, and is frequently used for finishing rooms, making furniture and other cabinetwork.

THE WHITE BLOSSOMED SHADBUSH OR SERVICE-BERRY

The little June-berry adorns itself with slender-petaled white blooms before its cottony leaves have fairly left the bud, and while the shad are swimming up the rivers,—whence its homely name of shadbush.

Service, or more commonly "sarvice" berry, it is also called. It frequently grows into a small, slender tree, and, if the birds would only leave it alone, would ripen its sweetish fruits, very like plump rosehaws in appearance. But the mealy

TREES THAT ARE BEAUTIFUL IN SPRING AND AUTUMN



TULIP-TREE

The tulip-tree is one of the hardiest of our flowering trees. The trunk is tall, straight and column-like. It has square, deeply-lobed leaves of peculiar shape, and striking yellow flowers, shaped like bells, make the tree beautiful in springtime.



LIQUIDAMBAR

The liquidambar, or sweet-gum, is so called because of its resinous sap. It is easily known by its gorgeous fruit—the spired spheres—and by its handsome star-shaped leaves. It is beautiful in autumn, when the leaves turn to brilliant reds and purples.

THE BUTTERNUT-TREE AND THE HONEY-LOCUST



BUTTERNUT-TREE

The butternut-tree is a very close relative of the black walnut, and is sometimes called white walnut. In foliage and habit it somewhat resembles the former tree, but is smaller and not so valuable. Its nuts are almost as good to eat as hickory nuts.



HONEY-LOCUST

The honey-locust is often confused with the flowering locust. Its coarse-grained wood is sometimes used for fence posts. It has long, black pods filled with pulp which is first sweet, then acid. The Indian children liked to eat the freshly ripened pods.

pulp appears to be so delicious to all birds, that one scarcely ever finds ripened fruit beneath the cherry-like foliage. It is said that Indians picked the fruits, but I cannot imagine where they found enough to make it worth while. The birds practically make it useless to improve the service-berry.

It is not from the attack of birds, but from those of little gnawing animals that great nut trees seek to protect the sweet, rich kernels of their fruit; and they are not altogether successful, we think, when we notice the number of shells bitten open and emptied by squirrels and chipmunks.

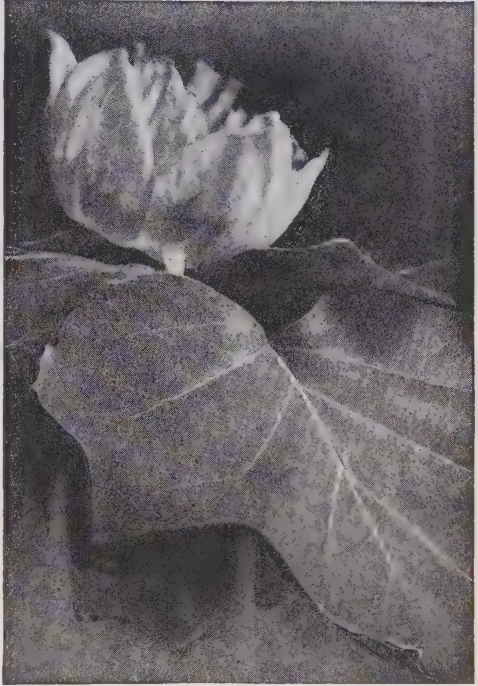
THE NOBLE CHESTNUT-TREE AND ITS USES TO MAN

It is fitting that our little talk about the chestnut-tree should come at the end of the story, for unless some clever scientist discovers a remedy for the disease that is killing them, our chestnut groves will soon be destroyed, just as the apple orchards are vanishing under the curse of the San José scale. The latter can be controlled by spraying, but the fungous disease of the chestnut, which girdles and soon kills even great trees, works under the bark. It will not be long before the noble trees, with their gray, deeply furrowed bark, and long-pointed, sharply-toothed leaves, will be only memories, as well as the sweet, glossy nuts, hurled by Jack Frost out of the velvet-lined husks in which they have lain all summer protected against bird and beast by the fearful bristling armor of prickles on the outside of those spherical husks. What will the railroads do without their chestnut sleepers, riven out of the tough, brown, durable and easily split wood? or the carpenters, who have used it in finishing houses? or the farmers, who have made fence-posts and a thousand and one things out of the chestnut poles? And how we shall miss its great round domes, which lighten the color of the forest in June with their masses of pale yellow tassels of bloom, that will turn no more into the red-brown nuts with the sweet kernels.

We are quite used to eating these sweet nuts, but we scarcely think of adding bark to our table dainties. School-children, however, delight in nibbling the smooth, thin, spicy bark of black birch-twigs; and they do not realize that in Sub-Arctic Russia the poor peasants de-

pend upon birch-bark to use as a sort of salad in their meals.

The earliest settlers in New England found that certain Indians, called "tree-eaters," by wealthier folk, when they had devoured their scanty winter stores of food, ate the tender bark of various trees. Moreover, in the Western states, where the great poplars line the water-courses, the Indians scrape off their sweet and sappy inner bark for a delicacy. "It is their ice-cream," said an educated red man. Farther west, the sugar and other



TULIP-TREE

A tulip-tree, or yellow poplar, grown in the open, is shaped like a cone, its trunk rising in the centre as straight and round as a column. The wood of this tree is very valuable for commercial purposes.

piners are similarly stripped by little scrapers carried for the purposes.

One of the oddest forms of bark-food, that much resembled oakum, or the fibrous coat of a cocoanut, was offered to explorers on the Pacific Coast, who found that they were eating dried hemlock-bark, soaked in salmon oil, which was, unfortunately, usually rancid.

Besides its occasional use as food, bark is valuable in many other ways. That of the hemlock, the oak, and the birch is used in tanning leather.

THE NEXT NATURE STORY IS ON PAGE 5429.

FANCY DRESSES THAT COST LITTLE



A good idea for a winter afternoon is to organize a children's fancy-dress tea-party. The costumes need not cost anything. They should be made up from things found in the house. All the dresses shown in the pictures on this page are made up in this way. On page 94 we read about Valkyries, and in the first picture here we see a Valkyrie, with helmet and breastplate made of cardboard, the armor of the knight in the fourth picture being made of similar material, covered with silver paper from tea-packages. The second picture shows a scarecrow; and in the third we see Santa Claus, with hair and beard of cotton-wool.



In the first of these pictures we see Peter Pan and Wendy, whose costumes are easily made. The children simply take off their shoes and stockings, and put on nightgowns over their ordinary clothes. In the middle picture is a dunce; and it is easy to dress for this character, as all that is needed is a dunce's cap, made out of a sheet of paper. The child in the third picture is Cinderella. She requires a soiled playdress and a broom.



The boy in the first picture is made up as an ancient Briton. His dress is a small rug, with a belt of brown paper, and a sword cut out of cardboard. There is really no limit to the number of characters we can represent if we are at all ingenious. The second picture shows Nell Gwynn. A girl from a charity school, as shown in the third picture, generally wins applause and often gains a prize, if prizes are awarded, for the best dress. The last picture shows how a peaceful schoolboy can easily be transformed into a bold, dashing pirate by the addition of a stocking hat, a cardboard sword, and a sash of some colored material, or even a shawl.



These costumes of a cowboy, a Welsh girl, and a fireman are made up of things found at home. The Welsh hat is made of black or brown paper, and the fireman's helmet of cardboard and paint.

A FANCY-DRESS TEA-PARTY

ON dull winter afternoons we are often forced to amuse ourselves indoors instead of in the garden and fields. There are many interesting ways of spending a wet afternoon in the house, and perhaps one of the best is to arrange a fancy-dress tea-party.

When we invite our friends we should not let them know what we intend to do, but should tell them as soon as they arrive in the house. If this is done it will cause much more pleasure and satisfaction all round than if elaborate preparations are made, for the great thing is to spend nothing at all upon the dresses, but to make them up from the everyday materials that are found in the house.

It is really wonderful what striking dresses we can make from curtains and table-covers and similar things, and we can see for ourselves the success of the plan by the pictures above and on page 5346.

When we have decided upon a character, we must begin to look round for materials to enable us to dress for the part. This is where our skill in dressing up will come in, for we must not expect to find the exact thing that is suitable.

One of the great pleasures of a fancy-dress tea-party is the search that takes place for the things we require. It is fine fun to ransack the attic, and hunt in various places for cast-off clothing; but we must be very careful not to do any damage or to go where we are forbidden. Moreover, we must ask permission to wear anything that we may want.

In connection with our fancy-dress tea-party we should offer prizes. This will make the dressing up much more interesting. The prizes need not be expensive, boxes of chocolates, cheap books of poems,

CONTINUED FROM 5132

or something similar will do very well. Not only should we offer prizes for the two best

dresses, but we should also award a prize for the least skilfully made costume. This should be kept a secret until the voting is all over. Then it will come as a great surprise, and create a lot of fun.

Little slips of paper may be handed round to all the guests, who should be asked to record their votes upon them, and drop them into a hat or box. When all have voted, we find out whose dress has received the most votes, and award the owner the first prize, the one who receives the second greatest number of votes getting the second prize, and the one who obtains the fewest votes receiving the consolation prize. If any two competitors secure the same number of votes, it is as well to ask all the competitors to vote again.

Some parts of certain costumes are rather difficult to get, and in such cases we may find that stiff cardboard or brown paper will come in very useful. The dress in the first picture on page 5346 is made entirely from white cardboard and a window curtain. The cardboard breast-plate and head-dress have been decorated with a little gold paint that was found in the nursery, and the spear was taken off the wall of the hall.

If we have not a spear in the house, we can easily make one from a bamboo cane, cutting the spear-head out of stiff cardboard and pasting it into a slit at the top of the cane.

The helmet of the fireman in the picture on this page is also made of cardboard painted with gold paint. The cowboy's lasso is just an ordinary clothes-line from the laundry. Material really counts for very little; ingenuity is everything.

THE ADJECTIVE LETTER

ONE of the very best games for the fireside is the adjective letter, which can be played by any number of children—the more the merrier. Nothing can be simpler, but few things cause more hearty laughter.

All that need be done is for one member of the party to write a letter full of blank spaces. These blank spaces should take the place of adjectives; and when the letter is ready the writer should call upon the party, one by one, for adjectives. He should put the adjectives down in the order in which they are spoken. The writer of the letter should not contribute adjectives himself, as the fun of the adjective letter lies in the quite accidental association of words. A member of the party may, for instance, frequently call himself or herself very unpleasant names, and the most ridiculous things come together when the blanks are filled up.

Here is a letter with blanks, which will show exactly how the game should be played:

Dear People,

The new year has now begun its journey, and this is the time for making resolutions. The future of our lives is before us, and we set out on a journey through another year, full of hope ahead, and the memory of a Christmas behind. What a year the past has been! And what a year this one is going to be! Tommy will be six; Nancy will be eight, and every member of this party will be a year older when this year is past. That giant Old Age, who captures us all, creeps slowly on his way, ready to seize us in his grip when something like a hundred more years have come and gone. But let us make a resolution that will terrorize this enemy of childhood: let us one and all agree, on this very day, to be true to the Children's Encyclopædia, which keeps its readers young. With such a friend no child can ever be old, and we few, we band of friends, will look forward and say to all the world that we will be .

With much love to all of you, my very people, I beg to sign myself,
Your Friend.

It is, of course, much more easy to write a letter about a particular party or a particular event, because the writer can make the letter much more interesting by bringing in the names of all the members of the party, or by referring to anything specially interesting to them. This letter, however, may be helpful at the beginning. Here it is given with the blanks filled up. The adjectives, which are printed in a different type, were all put in by chance.

Dear Happy People,

The clean new year has now begun its rollicking journey, and this is the pretty time for making little resolutions. The high future of our glorious lives is before us, and we set out on a tender journey through another noisy year, full of stupid hope ahead, and the memory of a fair Christmas behind. What a dark year the past has been! And what a blue year this one is going to be! Dull Tommy will be six; horrid Nancy will be eight; and every simple member of this gracious party will be a year older when this dignified year is past. That grave giant Old Age, who captures us all, creeps slowly on his noble way, ready to seize us in his broad grip when something like a hundred more serene years have come and gone. But let us make a straight-forward resolution that will terrorize this grand enemy of childhood: let us one and all agree, on this very green day, to be true to the beautiful Children's Encyclopædia, which keeps its loving readers young. With such a splendid friend no child can ever be old, and we joyful few, we grateful band of friends, will look forward, and say to all the stately world that we will be brilliant. With much love to all of you, my very ridiculous people, I beg to sign myself,

Your Perfect Friend.

The longer the letter is, the more the fun, and parties are not likely to get tired of this entertainment if the letters are drawn up so as to be interesting to every one in the party.

THE GAME OF ORANGES AND LEMONS

IN the game of oranges and lemons the two tallest players stand opposite each other with their clasped hands held up to make an arch. One of these players is Orange and the other Lemon, but the rest of the players are not allowed to know which is which. A line is then formed in single file, and, as it passes under the arch, Orange and Lemon sing these words:

"Oranges and lemons,
Say the bells of St. Clement's;
You owe me five farthings,
Say the bells of St. Martin's;
When will you pay me?
Say the bells of Old Bailey;
When I grow rich,
Say the bells of Shoreditch;
When will that be?"

Say the bells of Stepney;

I'm sure I don't know,

Says the Great Bell of Bow.

Here comes a light to light you to bed;

Here comes a chopper to chop off your head!"

With the last words the arch descends on the player who is passing beneath, and he is a prisoner. He is then asked, in a whisper, if he will be an orange or a lemon, and when he has replied in a whisper, he is sent to stand behind the one chosen. The march now begins again; and when, one by one, all in the line have been served in this way, a mark is placed on the floor, and all the oranges, holding to each other from behind, put forth all their strength in pulling against the lemons. The side that succeeds in dragging the other side well over the mark on the floor wins the game.

HOW TO KNOW THE ROCKS

IT is very interesting, not only to those who are ambitious to become skilled geologists, but to all of us, to be able, as we go about in different parts of the country, to tell what kind of rocks there are round about us. Especially does it add to the interest of a railway journey if, as we pass through cuttings or enter and leave tunnels, we can, on looking out of the windows, say what are the rock formations that we are passing, and to what period of the world's history they belong.

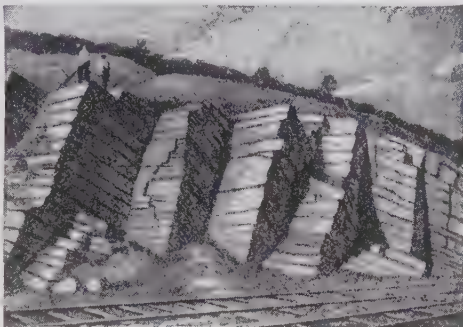
As we read in that part of this book that begins on page 2913, the earth's crust is made up of various layers of rock, some of it formed by the action of water, and other parts due to the action of fire. Then we read on page 4290 how to make a collection of rocks that shall teach us a great deal about the earth's history. But if we can get to understand, in a general way, by the appearance or the shape of the hills and cliffs, the particular kinds of rock of which they are made, we shall find that we have a much greater interest in all that we know and read of the earth's past history, away in the very remotest times, and we shall know, also, where to look for new specimens to go into our collection of rocks.

Of course, when the surface of hills and cuttings is covered with soil and is grown over by grass and ferns and bushes, it is impossible to see the rock under the soil. Then, again, where the bare surface of the cliff is exposed, the rock is sometimes so affected by the action of the weather that it is almost, if not quite, unrecognizable to the eye at a distance.

When the rocks themselves can be seen exposed to view, as in a more or less perpendicular cliff or in a very steep cutting, it will be at once noticed that the rock has one of two general characters. Either it is in layers, or *strata*, as they are called, or it has no such regular arrangement. Although not invariable, it may usually be taken for granted that the stratified rocks—those in layers—were formed by the action of water, while the non-stratified, or irregular rocks, are the result of fire. There are some formations of rocks known as metamorphosed, or changed rocks, which are more or less in layers, though these are not so pronounced

as the stratified rocks. They were originally formed by water, but have since been affected by fire, which has so changed them that they have but little resemblance to their original form.

First of all, we shall learn the character and appearance of some of the stratified rocks. There is limestone, which is so much used for building, making cement, statuary, and other purposes. It varies a great deal, being sometimes white, resembling loaf-sugar in both color and texture. An exposed layer of this is very striking. Limestone is sometimes cream-color or dull yellow, varying to blue-grey, and while it is often close grained, or built up of tiny crystals, it is also at other times like chalk. Marble is really a limestone. There is a sort of limestone called oölite, which is made up of round grains that give it the appearance of a fish's roe. A bluish variety found in Indiana is a popular building stone. Many varieties of marble of almost every color are found



Limestone rocks, showing the well-marked layers.

in the United States, and Vermont, Tennessee, and Colorado have many large quarries which employ thousands of men. Very little marble fit for statuary has been quarried in the United States up to the present, though it is believed that much exists.

In chalk cliffs we see many nodules, or rounded lumps, of a hard, black, or grey, or brown rock, which, when split, have a more or less transparent edge. These pieces are made of the ordinary common flint. Sandstone looks like what its name implies—a stone made up of grains of sand. It varies, of course, according to the size and color of the grains, some sandstone being coarse and others fine grained, while the color may be red, brown, yellow, or green. The strata, or layers, are usually very plain. It is the ease with which some kinds of sandstone can be split along the layers that renders this particular rock so useful for many purposes. The brown sandstone once so popular for building in New York came from Portland, Connecticut. It is also found in New Jersey.



Conglomerate (pudding-stone) with pebbles embedded.

Another interesting rock which is known as conglomerate, or pudding-stone, can usually be identified. As we pass through a cutting, or see it along the face of a cliff, it looks, as its name indicates, like a plum-pudding. Big

and little pebbles are thickly embedded in a layer of sandstone, and look something like the plums and currants in a Christmas pudding. When the pebbles are sharp and angular instead of rounded, as we sometimes notice, the rock is called breccia.

The rocks formed by fire are as varied as those that owe their construction to the action of water. Granite we all know, whether it be red or grey, because it is the stone used for curbs in all our towns and cities. A pitch-like stone, varying in color from green to brown and yellow, that may be seen in veins or masses bursting through other rocks in Europe or South America, is pitchstone. Basalt is easily recognized by its black, uniform color and its curious structure, which is in columns, like the Giants' Causeway, which we see on page 4873, and on the shores of Lake Superior.

Very often we see crossing another rock a vein of a dull, dirty-green color, streaked with brown or red. This is the well-known serpentine that looks so beautiful when polished and made up into ornaments. It is found usually with the limestone rocks.

The metamorphosed, or changed, rocks have, as might be supposed, an appearance which somewhat resembles both the other kinds of rock—those formed by fire and those by water.

There is a rock that looks like granite, but the minerals of which it is composed are arranged more or less in layers. It has been called stratified granite, but it is really gneiss. Another rock, which has a slaty appearance at a distance, and consists of layers of white quartz and mica, is known as mica-schist. The thickness of the layers of each mineral vary greatly, but mica-schist always has an appearance that once recognized cannot be mistaken. These are the two principal rocks of the metamorphose class that occur.

It is, of course, very difficult to give such details as shall enable us to identify all the different kinds of rocks found in the United States, but the hints given should prove useful. And if when we travel or go for a holiday we take a small geological map with us, we shall be better equipped for our recreation of identifying the various formations of rock through which we pass.

A DAINTY MUSLIN WINDOW-CURTAIN

THE idea illustrated in picture 3 on the next page is a charming way of decorating short, white, cheese-cloth curtains, and the wonderful thing about it is that there is no need to have the pattern drawn on to the material, because cheese-cloth is transparent enough to be seen through. The pattern, which is drawn on paper, is therefore pinned underneath the material, and the work done on top.

The particular design shown below, which is made from the honesty plant, is a repeating pattern—that is to say, we work one section and shift it along to continue, and the design

cut it so that long threads are left to work with, and use a medium-sized darning-needle.

We must measure our window, cut the muslin to fit, and make the hem before we begin our pattern, which must be traced on to a sheet of note-paper from the picture, and outlined in ink. With two pins it can be fixed underneath the muslin, on the left side, two inches above the hem.

We all know the darning-stitch, which is described on page 3555, that and ordinary running stitch is all we have to use. If we have forgotten how to darn, we should turn



1. The pattern of the honesty design, exact size, to be pinned underneath the muslin as a guide. is arranged to join on neatly, as indicated. The best thread to use is white flax thread—medium fine—which is cheap. We should to page 3555, where it is fully explained. Now to begin: we tie a very tiny knot in the thread, and put the needle in at point A

A DAINY MUSLIN WINDOW-CURTAIN

in the pattern picture, behind the cheese-cloth; the pattern can be bent for the purpose. We run three stitches to B, and three back again to A, a long stitch to C, and then start darning from side to side of the honesty shape. We take three long stitches on top and two tiny ones underneath, leaving a small loop at each end until the shape is covered and we are down to the stalk. We run down the stalk and up the next one, from D to E, where we begin to darn the next honesty shape, this time working upwards. Finish off with a back stitch at the point marked F.

This should almost finish the thread, but even if we still have some cotton left we should begin with a new thread at the top of the next shape. Joins in the middle of a shape must be avoided. We continue like this, running all the stalks and darning the shapes. The paper pattern underneath our work makes it firm, and prevents puckering. We should notice that the two little stitches are always made on the inner lines, which are to help us to keep them straight, and also form part of the pattern.



2. The darn.



3. The curtain complete.



4. The finished pattern for the curtain, showing how the sections are repeated.

For those of us who do not know how to trace off the pattern, this will explain. Buy a sheet of tracing-paper and cut off a piece big

enough to cover picture No. 1. Lay it on top, and go over the whole pattern, which will clearly show through, in pencil. Remove it and pin it to a piece of stout note-paper, and then get a piece of carbon-paper, such as clerks use in their bill-books, and lay that in between. Go over the pattern on the tracing-paper again, and a clear impression from the carbon will be left on the sheet of note-paper below. A charming table-centre can be made with this pattern by using it as a border all round a square of fine muslin.

It should be finished with a hem one inch wide, and backed with a piece of soft pink silk to show up the pattern. Or, if we like, we can make a little pin-cushion for someone's birthday, by using one "repeat" of the pattern only, darned on to a piece of muslin cut into an oblong square measuring $6\frac{1}{2}$ inches by $4\frac{1}{2}$ inches. But, instead of darning it in thread, we can use embroidery floss in palest pink, costing a few cents a skein. When the darning is done, cut another piece of muslin, the same size, for the back, and join these two pieces neatly together by running them round three sides, half an

A BUTTON MADE FROM A SHOE-LACE

IT may interest us to know how we can make a coat-button from an ordinary leather shoe-lace. We take the shoe-lace and make a loop at one end, just as we should make a loop in a piece of string. The loop should not be too big, as it is to be used for attaching the button, when completed, to a coat. The plan to follow in making the button is to tie a series of knots, taking care to keep the button round and neat as we make it. It is sufficient to keep on tying simple knots, one on top of another, until the button is the required size. But if we want to make a

really attractive button, we should loop the shoe-lace on the principle shown in the picture.



How to make the button.

We need not stop at three loops, but can continue the series on the same plan, and then pull the whole tight, when, if we have been careful, we shall have a neat, round button. A little practice will soon enable us to invent other designs for our shoe-lace buttons. The best plan is to practise for a time with a piece of thick string until we thoroughly understand how to tie the knots so that the button may be round, like a little ball. The final knot should be securely fixed.

MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country, especially in the neighborhood of woods where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, lumber-yards, cabinet-making establishments, carpenters' shops, and so on. In fact, almost any place where different kinds of wood are used is sure to provide us with some specimens. While it is especially to be desired that our sections should be across the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store; but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture; but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most stationery shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighborhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose woods we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white pine used for floors; the Norwegian spruce fir, the ordinary white wood of the carpenters; "Carolina," or yellow pine, used for interior trim; and Georgia pine, which is strong and durable. The white and red cedars, spruce, hemlock, cypress, and the redwood from the giant fir-trees all belong to this group.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees; the elm, a wood which is valuable on account of the fact that it will not split or warp; the ash, a tough, elastic wood, used much by carriage-builders and for oars; the wood of the various fruit-trees, such as plum, cherry, and chestnut; the beech, a very hard timber; the hawthorn, a reddish-white wood; the tulip-tree, yellowish white in color; the box and pear, used by engravers; maple, a reddish wood; sycamore, used for machinery and in the manufacture of charcoal; alder, another wood reddish in color; walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colors and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection, which will soon be extensive.

THROWING SHADOWS ON THE WALL

THE study of shadows is a very important branch of science. In the part of this book that begins on page 1883, for instance, we read about eclipses, and we learn that when an eclipse of the moon takes place what really happens is that the shadow of the earth is cast upon the surface of the moon by the sun, and the shape of this shadow is one of the reasons for believing the earth to be round, or spherical, in shape.

But, in addition to the fact that there is science to be learnt from a study of shadows, it is worth knowing that a great deal of amusement and pleasant recreation may be obtained

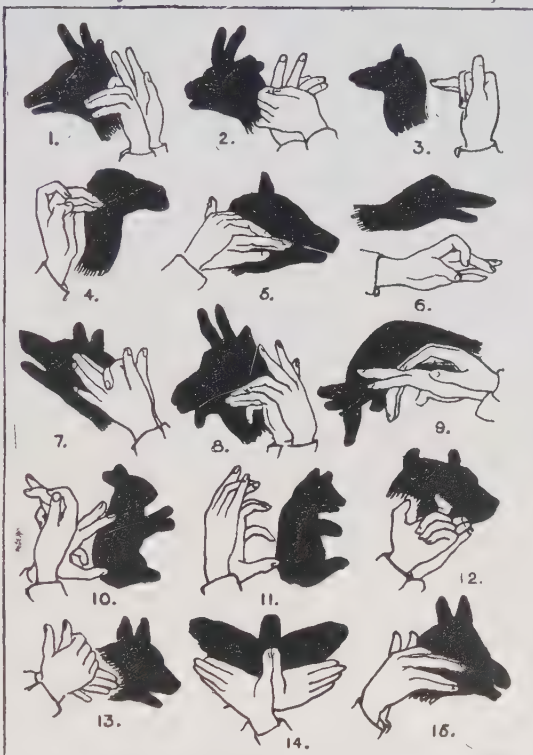
by casting shadows upon the wall with no other aid than that of the hands. Of course, we require a good light from a lamp or gas or electric light to throw the shadow, and we need some white or light flat surface upon which the shadow may be cast, but beyond this no apparatus at all is necessary. Practice only is required, and but very little is needed in the way of directions. We must, of course, have our hands between the light and the wall or other surface upon which we wish to throw the shadows; and in the pictures on this page we see a number of shadows of animals that any clever boy or girl can make with a little practice. We should imitate closely the position of the hands as shown in each picture until we get the shadow clearly and correctly. Let us repeat

all the different forms over and over again, and after a little while we shall remember the position of the hands without having to refer to the picture. This is absolutely necessary in order to make the performance a success. Having succeeded in learning to make these various forms, we must next learn to give action to the shadows by moving the fingers or thumbs so that the animals appear to be eating, or moving their ears or legs. Much fun, for instance, can be caused by clever movements of the Teddy-bear shadow. It also adds greatly to the effect if we can imitate the sounds made by the different animals and birds—barking, quacking, grunting, and so on, as the case may be. The

shadows shown in the picture are merely a few of hundreds that may be produced by different combinations of the hands and fingers. New forms, or rather additional forms, we shall invent as we become more proficient in making shadows; and it is remarkable how the same position of the hands, or almost the same position, will give entirely different shadows provided the hands are held at different angles to the light, and a finger or two be moved this way or that, as the case may demand.

Of course, the brighter the light the blacker will be the shadow, and the outline will be

clearer or less defined as we move our hands nearer to the light or to the screen or wall. For all ordinary purposes, and for an entertainment given on the spur of the moment, a light wall or blind is quite suitable, but some who are particularly quick and skilful in inventing and producing shadows may like a special screen upon which to give their entertainments. This may be made quite roughly, of any size, by merely nailing or screwing four battens together to form a square or an oblong, and covering the framework, thus built up, with cheap cloth. It would, of course, be quite flat, and would pack away, when not in use, behind a cabinet or chest of drawers. In using a screen, we should, of course, let the audience look upon one side of it, while we stand on the other side, with the light that is to cast the shadows beyond us. The spectators would see the shadows through the screen—that is, on the side opposite to that upon which we are casting them. Those who are even more ambitious and have the time to spend in which to make a more elaborate screen than the one described, can, if they so desire, improve this by painting upon it curtains, which will give it the appearance of a small stage. This, of course, adds greatly to the appearance of the shadows from the spectator's point of view, and also gives a professional touch to the performance, while it really costs very little indeed. But, as explained, no accessories are actually needed.



SHADOWS MADE BY THE HANDS ON THE WALL.

1. Reindeer. 2. Chamois. 3. Hound. 4. Camel. 5. Pig.
6. Goose. 7. Wolf. 8. Goat. 9. Elephant. 10. Hare. 11. Teddy Bear.
12. Ox. 13. Dog. 14. Butterfly. 15. Donkey.

the other side, with the light that is to cast the shadows beyond us. The spectators would see the shadows through the screen—that is, on the side opposite to that upon which we are casting them.

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PROVERB GAMES FOR THE FIRESIDE

THERE are a number of interesting games with proverbs that will give much fun at an evening party or at any time that a number of friends are met together. We read of one such game on page 2143, and there is another somewhat similar, in which the task set is for one player to guess a proverb that has been decided upon by the other members of the party who are present.

CRYING PROVERBS

THE game of Crying Proverbs is played in the following way. One player retires from the room, while the others choose some proverb, and each takes one word of the sentence. Then the player outside comes in, and, at a signal, all the others call out their words at one moment. From this hubbub of mixed sounds the player from outside has to try to learn the proverb that has been selected. If at first he does not succeed, the proverb can be cried out again and again, until he does guess it or gives up in despair.

Of course, there are a number of points to be considered that add to the difficulty and consequently to the amusement of the game. It is better not to choose a proverb that has in it some distinctive key-word, for if the guesser hears this he is likely to answer correctly at once. For example, the word "broth" would at once suggest "Too many cooks spoil the broth." Then it is wise to choose a fairly long proverb, so as to have as many players as possible calling out the words, rendering the sounds the more confusing.

ACTING PROVERBS

IN this game each player takes it in turn to be the actor, and he has to go through some actions which will suggest a proverb. The other players watch him, and try, from what they see him do, to guess his proverb. For instance, the action of sewing would suggest "A stitch in time saves nine." Carrying a

cup very carefully across a room would mean "A full cup must be carried steadily." A pebble rolled along on the ground, and then picked up and looked at as though something were expected to be found upon it, would be "A rolling stone gathers no moss." There is, of course, good scope for ingenuity here.

PROVERB GAMES ON PAPER

THERE are several proverb games that are played with pencil and paper. A good game to play round the fire is for each player to write upon a slip of paper the vowels only of some popular and well-known proverb. The papers are then exchanged, and everybody has to try to discover the proverb of which he has only the vowels. Here is an example: i e a o a a e a a i. This looks rather formidable, but it is really the skeleton of the proverb "Give a dog a bad name and hang him." If this game is thought too difficult, we may play a similar game by taking well-known proverbs and omitting every other letter or every third letter.

Another similar game is to break up a short proverb into its letters and arrange these in alphabetical order, thus: d d e e e e g i n n n o o s s w w. If it is considered too difficult, one word may be given of the proverb as a key. For instance, in this example the word "weeds" might be given. The whole proverb is "Weeds need no sowing."

At a proverb party a good puzzle is this:
We is do

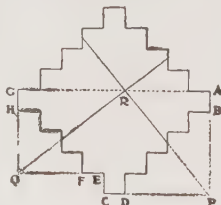
This represents a well-known proverb in an abbreviated form. That will be a clever boy or girl who guesses the solution without having heard it before. The proverb represented is:

"Well begun is half done."

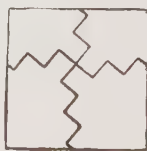
In all these proverb games it is essential that the proverbs chosen should be really popular ones that are quite well-known to most people.

SOLUTION OF THE SQUARE PUZZLE ON PAGE 5136

WE read on page 5136 how Kenneth was offered a prize by his father if he solved a curious puzzle. He tried for a long time before he could do it, but just before bedtime came he was successful, and his father was very pleased. If we wish to do what Kenneth did, this is how we must proceed: Prolong the lines A B and C D to meet at the point P; and also the lines E F and G H to meet at Q. Then, along the line A G, measure A R equal to B P. If we now cut



How the square was made.



along the straight lines P R and Q R, we shall have four pieces which fit together into a square, as shown in the second diagram. The original figure was built up of rows of squares, beginning with a row of nine. The puzzle is solved in exactly the same way if we begin with a row containing any odd number of squares, the successive rows each containing two squares fewer than the previous row, so that we always arrive at a single square top and bottom.

SOLUTIONS OF THE PLANT PUZZLES ON PAGE 5129

IN the botanical puzzle game on page 5129, descriptions were given of six different plants, and we had to name these plants of such varied characters, uses, and appearance

from the descriptions given. The correct solutions are as follows: 1, Bladderwrack; 2, Mushroom; 3, Bitter-sweet; 4, Hyacinth; 5, Wheat; 6, Coconut palm.

THE NEXT THINGS TO MAKE AND THINGS TO DO BEGIN ON PAGE 5443.

The Story of THE EARTH.

WHAT THIS STORY TELLS US

WE read in this story something of the mysterious powers of electricity and magnetism, two of the great secrets of Nature that man has yet to solve. But although man at present understands little of these things, he has learned to use them in a thousand ways, of which there is no room to speak in these pages. Our business here is to learn the ways and the laws of Nature. There would be material for endless reading and writing if we were to follow up this Story of the Earth with an account of how men have applied the ways and laws of Nature. The electric bell, the various kinds of electric light, the telegraph, and the telephone, with and without wires, the machines which combine the properties of electricity and magnetism, turning motion into electricity or electricity into motion—all these are developments within the last two generations, or less, of what was learned by the early workers in electricity, notably in our own country. Here we can study only the little that is known of the laws of these two forces.

NATURE'S GREAT MYSTERIES THE MARVELS OF ELECTRICITY AND MAGNETISM

THE Greek name for amber is *electron*, and it was found long ago that if a piece of amber is rubbed, it will attract light things to it; and this state of the electron, or amber, was called electricity. As it was produced by rubbing, it was sometimes called frictional electricity. It was found that many other things behaved in the same way when they were rubbed, and these curious and amusing facts were studied with some interest. Much later, it was discovered that if we have certain mixtures of chemicals arranged in what is called an electric cell, something will run along a wire, and this something is called an electric current.

This branch of electricity, also, has been very carefully studied, because the current that runs along the wire can be made to do things; it can be made to ring bells when required; part of the wire can be made to glow and give light; or the power of the current can be turned into motion and used to drive machinery, motor-cars, or trains.

The current need not necessarily be made by electric cells or batteries, but however it is made it can be turned to various purposes. We can send messages by means of such currents running along wires, or we can

CONTINUED FROM 5246



speak by means of them. Quite lately we have learned that the wires are not necessary, that messages can be sent without them; and, later still, that it is possible to speak without them, so that we have wireless telephony as well as wireless telegraphy. There is another subject, called magnetism, knowledge of which began in a simple way, as electricity did. Certain kinds of iron will attract iron or steel; a piece of iron that does this may be called magnetic, or a magnet, and if a piece of iron is stroked by a magnet, it can be turned into a magnet too.

When we take a straight piece of iron and magnetize it, we may call it a magnetic needle, and if this be hung or balanced in some way so that it is free, we find that one end of it always turns more or less toward the North Pole of the earth, and the other end toward the South Pole.

Whatever this means, it is very convenient and useful, because here is something—the magnetic compass—which men may carry about with them anywhere, and which will always show them the direction of the poles, even when the stars cannot be seen. Just as our knowledge of amber led us on to far greater things, so our knowledge of a simple horse-shoe magnet leads us on to wonder-

ful facts. To begin with the case of a compass-needle, the only explanation of its behavior is that the earth itself is a huge magnet, and one end of the needle points to one Pole of the earth, and the other to the other, just as iron filings will behave in relation to the poles of a little magnet that we may hold in our hands. It may be asked: How is the earth like a horse-shoe magnet? But we must not be confused by the shape of such a magnet. It is really a bar of iron, one end of which is like the North Pole of the earth, and the other like the South Pole, and it is only bent into the horse-shoe shape for convenience.

We find that the magnetism of the earth does not quite run along the direction of the line joining the North and South Poles. The North Magnetic Pole of the earth is, therefore, not at the North Pole, though it is not very far distant from it; and the South Magnetic Pole, though near the South Pole, is not actually there. The compass-needle, therefore, does not point to the North Pole, but to the North Magnetic Pole, which is not due north.

HOW MAGNETISM IN THE SUN CHANGES THE WEATHER ON THE EARTH

Now, though it is a great advance that magnetism should have grown from being a scientific curiosity to teaching us that the earth itself is a huge magnet, yet that is not all. Just as our knowledge of electricity grew until we learned that it exists throughout the universe, so our knowledge of magnetism has grown until we learn that we have to study it in the sun as well as on the earth.

It has long been known that there is some connection between happenings in the sun and the state of the earth's weather. It has been known, also, that sun-spots have some connection with magnetic needles on the earth. Now, it has been discovered quite lately that sun-spots are due to magnetism at work in the sun. When the light coming from sun-spots is very carefully studied by spectrum analysis, of which we read on page 2738, it is found that there are certain features of it which teach us that it is under the influence of magnetism. This helps us to understand why sun-spots and the disturbance of the magnetic needles on the earth should have something to do with each other. Thus we begin to see how our ideas of mag-

netism are growing, and the very last discovery made about this subject is particularly interesting to us, because it depends upon what we have lately learned about light and light pressure, and about the fact that the earth is a magnet. That is the discovery about the aurora of which we read on pages 3882 and 5293. Let us now see what other great things we are able to learn from the study of electricity and magnetism.

THE ELECTRIC CURRENT THAT IS MADE UP OF WAVES IN THE ETHER

We know that light consists of waves of the ether; we know also that similar waves exist, forming a great scale, so to speak, above and below that part of the light scale which we can see. We know, further, that all these waves are really a kind of electric current; that they all travel at the same speed and have the same laws. They travel in the ether. We must clearly understand that all electric currents travel in the ether. They are ether waves; that is equally true whether they are running through the air without wires, or through the ordinary electric wires that we find so useful for directing these currents.

It is one of the penalties of the increase of knowledge that old names come to get new meanings, and then we are liable to be confused. This is true in the case of electricity. One meaning of it is currents or waves existing in the ether, and we cannot understand that too clearly. But the word has now come to have another meaning, depending upon entirely new discoveries, and we must not be confused by it. In this sense of the word, we may now talk quite properly of atoms of electricity, provided that we are not confused by the new meaning of atom and by the new meaning of electricity.

THE DISCOVERY THAT ALL THINGS ARE MADE OF ELECTRICITY

The old meaning of atom, which is still employed, is applied to those minute particles well known to chemists, which make up, say, gold or carbon or oxygen. The new discovery is that these things are found to be made up of something else, and the something else of which they are made up produces electricity, and has all the properties of electricity, and can therefore only be called electricity. Matter when thus studied melts away, therefore, into a kind of power.

The kinds of particles that make up atoms are called electrons, as we have already learned. Their great feature is their immense electrical power; they carry electricity with them. All the electrons from all kinds of atoms are the same, and all the electrons carry the same quantity of electricity, no more and no less. All this is very important and wonderful, because it brings us down at last to something which is really the same everywhere, and out of which all the different kinds of matter are built. But something much more remarkable has yet to come.

THE ATOMS OF ELECTRICITY THAT MAKE THE SUN AND STARS AND ALL THINGS

We have said that these electrons carry a certain quantity of electricity. When we study their speed, their size, and their mass, and, indeed, all their properties, we make the staggering and magnificent discovery that, if we are to believe the evidence, all the properties of these electrons can be explained by the electricity which they carry. All their properties are electrical. We can account for everything by means of the electricity which we know is there. There is, therefore, no reason to suppose that anything else is there. These things are electricity—atoms of electricity, and nothing else; and the only conclusion to which we can come is that matter is made of electricity.

These atoms of electricity, as they are put together in certain ways, arranged into systems like a solar system or into star-clusters like the Pleiades, make the atoms and the molecules of the matter that we know so well; and there is no need to call in anything else. Electricity, therefore, began, as we saw, in the study of amber when it was rubbed, and thus it got its name; but it has now come to this, that matter itself is a simple kind of electricity, and nothing else.

THE TWO KINDS OF ELECTRICITY THAT ALWAYS ATTRACT EACH OTHER

It was long ago found that electricity showed itself sometimes in a way which led people to suppose that there were two opposite kinds of electricity, which they called positive and negative. In rather the same way, we find that anything which is magnetized is different at the two ends, or poles. Now, the two opposite kinds of electricity attract each

other, but two things both charged with the same kind of electricity repel each other. In the same way, the north pole of a magnet attracts the south pole of another magnet; but similar magnetic poles repel each other, just like similar electricities. What we call the north pole of a compass-needle ought, therefore, to be called the north-seeking pole, for it must be opposite in kind to the North Magnetic Pole of the earth, toward which it turns.

These facts, long known about opposite kinds of electricity, have to be applied to our new discovery that matter is electrical. Similar electricities repel each other. The electrons that we have learned about, which compose atoms and are shot out from atoms, are all charged with, or carry what, for the sake of a name, we call negative electricity. Almost certainly it would be truer to say that they *are* atoms of negative electricity. Then, according to the old law which has been known for hundreds of years, they should repel each other, and so they do.

THE MARVELS THAT MEN HAVE LEARNED FROM RUBBING A PIECE OF AMBER

But, if this is the case, how are we to explain the fact that particles of negative electricity can live together in friendship and order, so to speak, making up the atoms of matter? The answer must be that there is some positive electricity in the atom which attracts all the negative electrons and holds them together by its power. It makes us think of the atom rather as we think of the solar system, with the positive electricity compared to the sun, and the negative electricity compared to the particles of planets. That is as far as our knowledge goes at present, for we cannot say any more yet about the positive electricity of the atom.

It has been wonderful enough to start with the amusing behavior of rubbed amber, and to end with a new theory of what matter really is—amber and air and stars and everything else. But even that does not tell us all the wonders of electricity, quite apart from its practical uses, which are not our concern here. For it is to electricity that we are now turning for the key to something else. If any student of the Story of the Earth were asked what is the

greatest problem still unsolved, what is the greatest discovery that any man could now make, he would certainly answer, the secret of gravitation. Here is something acting throughout all the universe in a regular way according to fixed laws.

All that has been done during the many years that have passed since a young man in his early twenties, called Isaac Newton, discovered the law of universal gravitation has been simply to prove that the law is as constant as he asserted. The law as he stated it is truer than he could possibly prove at the time. No kind of screen affects the action of gravitation; temperature does not affect it, chemical changes do not affect it; so far as we can learn, nothing whatever does. We have simply proved that Newton's law is true, but during all this time we have completely failed to discover the cause of gravitation. We know no more *how* it acts than Newton did. All we can say is that it must act through and in the ether, and that we have more proof of the existence of the ether than Newton had.

WHY THE EARTH'S PULL IS BELIEVED TO BE CAUSED BY ELECTRICITY

There is no end to the theories of gravitation, but the best of them breaks down. The very interesting thing is that the wisest and deepest of living students are coming to be convinced that gravitation, like everything else, has its secret in electricity. It must be an electrical force acting through the ether. Of course we have no proof of this yet, but the more men learn about electricity and the ether, the more inclined are they to take this view; and the study of electricity will be bigger and more important than ever if, as the wisest suppose, universal gravitation itself is at some future time proved to be an electrical fact.

We shall better understand why men think as they do if we consider for a moment what is believed about the ether. The ether, or the ether of space, as it is sometimes called, was first recognized because the existence of something had to be admitted in order to carry light. No student of Nature can believe that things act from one place to another without there being something in between. There can be no action at a distance without something

to convey that action. If anything at all passes from the sun to the earth, there must certainly be something between the sun and the earth; and that something is the light-bearing ether.

HOW THE SUN AND THE EARTH ARE ABLE TO PULL EACH OTHER

Now, the other great fact of the relation between the sun and the earth is that they attract each other; and no student of Nature can believe that they attract each other from a distance without there being something between them through which the attraction acts. So even if an ether were not wanted to convey light, it would be wanted for gravitation to act through.

We have learned that light is an electrical disturbance in the ether; we have learned that there are many other possible electrical disturbances in the ether which are of the same order as light in all essentials, though they do not happen to affect our eyes. All the properties of the ether, then, as we understand them, are known to be electrical, except in this matter of gravitation.

But now let us pay particular attention. These electrical forces that we know of in the ether can push and can pull. We have learned about radiation pressure, which teaches us that pushes can be exerted through the ether; but it is also certain that pulls can be exerted through the ether. When any light thing flies to the rubbed amber, attraction of some kind is happening through the ether. Electricity and magnetism are different parts of one and the same thing, and when a magnet attracts a steel needle, a pull is being exerted through the ether.

SHALL WE LIVE TO LEARN NATURE'S GREATEST SECRET?

We have proof, then, of two kinds of attraction—electrical attraction and magnetic attraction—which happen by means of the ether. There is yet a third kind of attraction, chemical attraction, where atoms of one kind of element fly to atoms of another and form a compound—perhaps with great violence, which produces light and heat. Every chemist knows now that this chemical attraction, which may be so powerful, is really electrical. It happens through the ether.

If, then, we are compelled to believe, as we are, that the ether is the seat of

electrical attractions which account for the behavior of positive and negative electricity, which account for magnetism, and which account for chemical attraction too, evidently it is only a step in thought to suppose that another kind of attraction, called gravitation, which must also act through the ether, is electrical also. We may dare to predict that many children who read these words will live to see Nature's greatest secret, the secret of gravitation, revealed along the lines here described.

**THE TREMENDOUS POWER THAT WILL
ONE DAY BE IN THE HANDS OF MAN**

No one can say what new powers this will put, when it is at last discovered, into the hands of mankind ; for to learn how gravitation acts will be sure to mean, sooner or later, learning how to control its action, and this opens up possibilities to which there is no limit at all. Every day we balance the action of gravitation by other forces, but to control its action is a different thing altogether, and would be by far the most important practical discovery that had ever been made.

We have now studied the Story of the Earth in all the greatest of its pages ; we have seen how men had to begin by making the tremendous discovery that this flat, fixed earth, as it seemed, is really a round ball twisting on itself and flying through space. We have learned how and why this ball flies, that it is one of many belonging to a family, and that that family is only one of a countless host of families in space.

Our study of the sun and of the stars has helped us to understand the earth and its place in the universe. We have learned something of the crust of the earth, and we know that it bears records of the development of Life, and of more than Life, of Mind and Love also.

**THE GREAT STORY THAT HAS BEEN
UNFOLDED BEFORE US**

We have had to study the stuff of which the crust of the earth is made, and which makes also the ocean of gases that covers the earth's crust everywhere, and at the bottom of which we live. We have learned that the stuff of which the earth is made is the same as the stuff that makes the sun and stars. We have studied some of the countless changes that are always going on, especially through the great power of water, in

the earth's crust, and also in the bodies of all the living things of which the earth is the cradle and the tomb. Lastly, we have studied the great forces which are at work throughout the universe, some of which act upon the earth, so that life is possible here. We have studied the laws of motion and of gravitation ; we have studied sound and heat and light, and electricity and magnetism ; and we have learned, at any rate, the most important of the facts which the mind of man, toiling through many ages, has slowly begun to discover regarding them.

Greater than any one of these facts and conclusions are one or two supreme facts and conclusions which must govern and rule the minds of all thinking beings "to the last syllable of recorded time." The story which has been unfolded before us is that of a world which, with all its differences, is yet all One. We learn that we live in a Universe, a great Whole "whose body Nature is and God the soul." The laws of the little are the laws of the great. What is true at one time is true at another, nor is there any fact in all the universe which contradicts any other fact in any place or at any time, however distant.

**THE CONSTANT TRUTH THAT NOTHING IS
EVER LOST**

We have learned, too, that everything changes ; but though everything changes, nothing is ever lost and nothing is without consequence. Though new facts are always appearing, they depend upon the old ones, and nothing new comes into being from anywhere. Perhaps we may have learned, indeed, the supreme lesson learned by William Wordsworth, as by the greatest of men since thought began, and expressed by him in these simple words, with which we may conclude our Story of the Earth :

For I have learned
To look on Nature ; not as in the hour
Of thoughtless youth ; but hearing oftentimes
The still, sad music of humanity,
Not harsh nor grating, though of ample power
To chasten and subdue. And I have felt
A presence that disturbs me with the joy
Of elevated thoughts ; a sense sublime
Of something far more deeply interfused,
Whose dwelling is the light of setting suns,
And the round ocean, and the living air,
And the blue sky, and in the mind of man :
A motion and a spirit, that impels
All thinking things, all objects of all thought,
And rolls through all things.

THE DECLARATION OF THE INDEPENDENCE OF BRAZIL



After King John went back to Portugal, the Brazilians determined to be independent, and to make Prince Pedro the first emperor. The story told, says that the king ordered his son to return to Portugal, but he refused. On September 7, 1822, Prince Pedro received letters from his father, which he read, surrounded by his waiting staff. When he had finished, he raised his right hand, and solemnly cried, "Victory or Death." The painter has chosen this scene as the subject of his picture.

The Book of ALL COUNTRIES



Buenos Ayres and the Rio de la Plata early in the Nineteenth Century.

THE REPUBLICS OF SOUTH AMERICA PART II

IN the first part of our story of the South American republics we told you about the countries in the northwest and west, and the two little countries of Uruguay and Paraguay, and the struggles they have had to gain freedom and settled government. In this story we shall tell you the story of the A. B. C. countries, as they are called, the three more powerful republics of Argentina, Brazil and Chile.

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The old name for Argentina was the Viceroyalty of La Plata, and the viceroy had his seat of government at the city of Buenos Ayres, the beautiful city which is now the capital of the republic. Trouble for the Spanish government began in Buenos Ayres some time before the revolution, for when Spain was in alliance with Napoleon, a British expedition invaded the province. The viceroy ran away, but the Argentines, under a Frenchman named Liniers, defeated the British, who had a very poor general, and captured a large force. A number of the British officers settled in the country, and it is said that their influence helped on the revolution.

The revolution began in Buenos

Ayres on May 25, 1810, when a junta, or committee, was appointed to take over the government from the viceroy, who was compelled to resign and was sent out of the country. But though the viceroy went quietly, the revolution was not peaceful. Not only were there Spanish

garrisons in the towns, but the people were divided. Many who called themselves Royalists, wanted the old conditions to continue, and war began. At the beginning of the war, the Patriots, as the revolutionists called themselves, had many ups and downs. But in 1812, the Patriot army, under General Manuel Belgrano, defeated the Royalists in the battles of Tucuman and Salta, and these two victories decided the independence of Argentina. The next year José San Martín came back from France, where he had been fighting. He soon gained command of the armies, and was able to keep the war with the Spanish in Chile and Peru. There was much fighting in Argentina afterward, but it was between the Patriots themselves, and was caused by the mistakes made in learning to govern themselves.

The Spanish Viceroyalty of La Plata had been made up of a number

of smaller provinces, and an effort was made to unite all these provinces into a confederation. There was jealousy between the provinces, however, and Bolivia, Paraguay and Uruguay declined to join, and set up governments of their own. The other provinces formed the Confederation of Argentina, and in 1825 they adopted a constitution, but it was long before there was any real unity in the country.

WHY THERE WERE MANY QUARRELS AMONG THE REVOLUTIONISTS

When we compare the Revolution in North America with the revolutions in South America, we must remember one great difference between them. In North America the revolution was the result of the opinions of a large number of people expressed by their chosen representatives. In South America the leaders chose themselves and proceeded to make the revolutions. Naturally, in such a case there was much jealousy between the leaders, and even before the war of independence was won they began to quarrel.

For a while the quarrels among the Patriots in Argentina caused something like anarchy, and at one time some of the leaders even thought of turning the government into a monarchy. In 1826 Rivadavia, a statesman who had done much for the good of his country, was elected president. He tried to establish a strong government, and although his power lasted only a year, he succeeded in that short time in improving the laws. He was anxious that education should be improved, and it was he who established the University of Buenos Ayres.

Not only was there jealousy among the leaders, but the provinces in the Confederation soon showed jealousy of one another. Some of them sought to make themselves independent, and for some years there was civil war, anarchy and tyranny. So that you may understand the cause of the trouble, we must tell you that there are two kinds of republic. One is like the United States, which comprises a number of states united under one government, but in which each state has certain powers of self-government. The other kind of republic is like that of France, which has only a central government, and the provinces have no power to make laws. Some of the people of Argentina wanted the first kind of

government, and were called Federalists. Others wanted a government like France, and were called Unionists. In the midst of the confusion there was a war with Brazil, for the possession of Uruguay, which lasted for years, and added greatly to the trouble of the distracted country.

THE STORY OF A TYRANT GOVERNOR

All this trouble and confusion gave Juan Manuel Rosas, the leader of the Federalist party, an opportunity of seizing the government, which he controlled for more than twenty years. During the greater part of this time he was a dictator, or rather a tyrant, and until he was overthrown his will alone was law. Rosas reminds us of the queen in "Alice in Wonderland," who, when any one displeased her, said, "Off with his head." Any one who ventured to oppose this grim tyrant, or was even suspected of disagreeing with him, was likely to be put to death, and it is said that many thousands lost their lives that Rosas might stay in power.

In 1852 Rosas was driven from the country, and immediately afterward a new constitution was adopted by all the provinces except Buenos Ayres, which refused to accept it and was allowed to stay outside the confederation in lonely grandeur. Ultimately there was a civil war, which ended by Bartolomé Mitre, the president of Buenos Ayres, becoming president of the confederation, and the city of Buenos Ayres being again made the capital. During President Mitre's administration, war was made against Argentina by Paraguay, as we have already told you in the story of that country, and as you know, Paraguay was defeated in the war, which lasted for five years.

Since its close, except for a few small insurrections, Argentina has been at peace. There have been boundary disputes with the surrounding countries, but these disputes have been wisely settled by arbitration. During the years of peace, the country has prospered exceedingly, and has gained the reputation of being a well-governed nation with a self-controlled people.

THE COUNTRY OF ARGENTINA AND ITS PEOPLE

The country has great natural wealth in its fertile plains, or pampas, which provide grazing ground for immense

EVIDENCES OF PROGRESS IN ARGENTINA



This picture shows how well the progressive country of Argentina cares for people who have fallen mentally ill. The buildings are part of a beautiful hospital which has been built on the plains near Buenos Ayres so that the patients may have the benefit of work in the open air. The patients are cultivating the fields which surround the hospital. Notice that oxen are still used in cultivation.



This is one of the wheat fields which belong to the hospital. The patients who are able to work are reaping the ripened grain. Here again we see the use of oxen in agriculture, which is still very common in South America. Notice, however, that the reapers are of a very modern type and seem strangely familiar. In fact, it is probable that they were made in the United States.

herds of cattle and horses and flocks of sheep. Large tracts of land are devoted to the cultivation of wheat and other crops. The northern part of Argentina is tropical, while the south stretches far down into the temperate regions, so that almost every kind of crop can be grown within the limits of the country.

There are not many Indians in Argentina, and most of them live in the hot northern territory. Rosas made war against the wild Indians of the southern plains and reduced them to helplessness, and the tall Patagonians have almost died out. The picturesque vaqueros, or cowboys, of Argentina are not really Indians. They are gauchos, a people who are of half Indian and half Spanish descent. The white people who were in Argentina at the time of the revolution were nearly all Spanish, with very little Indian mixture. Since then people from every country in Europe have gone to live there. Unfortunately these people live in numerous little colonies of their own instead of mixing with one another to make one people, and it will be long before Argentina really becomes a nation.

THE REVOLUTION IN CHILE HELPED BY ARGENTINA

A few months after the revolution began in Argentina, Chile followed the example of the Argentines. The Spanish governor was forced to resign, and a Chilean junta undertook the government. Naturally, just as they did in the other provinces, the Spaniards tried to retain their power by force, and for a time it seemed as if they might succeed. From the first, the revolutionary leaders were jealous of one another, and because of their desperate quarrels it was impossible to make headway against the Spanish army. The Patriots, however, struggled on until 1814, but in that year they were badly defeated; the Spanish were enabled to take control of the government again, and the revolutionary leaders had to leave the country. One of them, Bernardo O'Higgins, fled to Argentina and took refuge in Mendoza, and there met José San Martín, who had been made governor of the province.

Argentina, as we have seen, was already distracted by disputes. But San Martín, who sought nothing for himself, had not been drawn into the disputes, and therefore he was free to go to the aid of Chile, a task he was all the more

willing to undertake because he knew that, with Peru and Chile in her power, Spain would soon be in a position to attack his own country. Before long, he got together a well trained army of Argentines, chiefly gauchos, and taking O'Higgins as his second in command, he made a great march through the Andes and defeated the Spaniards in a pitched battle not far from Santiago. The next year the Spaniards made another effort to subdue the Chileans, but were defeated in two battles, and from that time on there was no doubt of Chilean independence. Then the Chileans set to work to build a fleet, which, as we have told you, took San Martín north to Peru to free that country.

THE EARLY TROUBLES OF THE REPUBLIC OF CHILE

Meantime Bernardo O'Higgins was made director-general, or rather dictator, of the republic, and in spite of many dissensions, he was able to organize the government and to keep peace for five years. At the end of that time he saw that the people had turned against him, and to save the country from revolution, he resigned. A constitution was then adopted, but the new government did not last long. In fact, in the next seven years there were no less than ten changes of government, and three different constitutions were drawn up and adopted. There was an Indian war and there was civil war; there were quarrels between the church and the state, and there was trouble caused by lack of money, and the republic seemed to be drifting toward anarchy. At last, however, a strong conservative government took the reins of power. One conservative president after another ruled with a high hand, and all power fell into the hands of a few great landowners, while the great masses of the people were denied any share in the government. But, for thirty years there was peace, and during this time the country made long strides in progress. Railway and telegraph lines were built, banks were established, and schools and libraries were founded. During this peaceful period at home, Chile went to the help of Peru in the little war with Spain, of which we have told you in the story of Peru. There were boundary disputes with Argentina which were peacefully settled for the time and there was a boundary dispute with Bolivia,

ARGENTINE AGRICULTURE AND SHIPPING



Argentina has become one of the great food countries of the world. This picture shows the preparation of a large field for the cultivation of wheat or corn, while the second picture shows one of the immense herds of cattle with which parts of the plains, or pampas, are still covered. Most of the landowners have large estates, called estancias, but smaller holdings are now being taken up.



This fine boat carries passengers across the Río de la Plata between Buenos Ayres and Montevideo, the capital of Uruguay. Ocean-going steamships can go up the rivers Parana, Paraguay and Uruguay for many miles, while smaller boats go far into the interior and bring produce down to the sea.

which, in 1879, led to a war that was disastrous for both Bolivia and Peru.

THE WAR BETWEEN CHILE AND PERU

In this war, as we have read in the first part of our story, Peru went to the help of Bolivia, and declared war on Chile. But the Chileans outgeneraled the Peruvians and Bolivians in every move. The Peruvians won one naval battle in the first year of the war, but they were hopelessly overmatched both on land and sea, and Chile won the war. Peru and Bolivia were badly defeated, and when peace was made, Peru was compelled to cede the provinces of Tacna and Arica to the victors, and Chile also remained in occupation of the Peruvian province of Tarapaca and the Bolivian province of Antofagasta. Antofagasta was ceded to Chile by treaty in 1905, and except for right of way through Chilean territory, Bolivia is shut out completely from the sea. Peru still claims that Tarapaca belongs to her, but Chile has kept possession of the province.

In 1887, the peace that Chile had enjoyed at home was broken. In that year the president, Senor José Manuel Balmaceda, who had roused opposition against himself, tried to carry on the government without calling a session of the legislature. This high-handed proceeding was followed by civil war. The president's followers were badly defeated, the war coming to a sudden end when he shot himself to death to escape capture.

Once the civil war was ended, the republic went back to its peaceful course. Disputes about the southern Argentine boundary threatened to break the peace; but as we have seen in the story of Argentina, the disputes were happily settled by arbitration and a treaty was made between the two countries. The arbitrator gave Chile a strip along the southern coast of the continent so that she should hold both coasts of the Straits of Magellan.

Since then Chile has gone on to prosperity at a steady pace, which has been broken only once, and then not by war. In 1906 a terrible earthquake, followed by a fire, destroyed the city of Valparaiso, and wrecked parts of Santiago and other towns. The suffering caused by the earthquake was very great, but the damage was quickly repaired, and Valparaiso was soon rebuilt.

CHILE IS A VERY LONG, NARROW COUNTRY

Chile is so long and narrow that it has been compared to an eel. Its breadth nowhere exceeds two hundred and fifty miles, and in places it narrows down to less than ninety, while its length exceeds two thousand six hundred miles. The northern part of this long, narrow country is within the tropics; the southern part is within the same latitude south as Labrador is north. You can see, therefore, that the climate is very varied. In the desert of the dry belt, the heat is tropical, while the southern climate is like that of the north of Scotland. Chile, as you may see from the map, is a mountainous country, and the Andes run through its entire length. But, as you may read elsewhere, in Central Chile the mountains divide into two ranges, and in between these ranges lies the great central valley, six hundred miles long, and further north there are smaller valleys. It is in these valleys that the agricultural wealth is produced. They are all very fertile, and are watered by mountain streams and rivers, which leave a rich deposit of mud, brought down from the hills. The central valley is in the temperate zone, and, by reason of both its size and its climate, produces the chief agricultural wealth of Chile. More than the amount of food required from the country can be raised on the valley farms, and Chile has large quantities of grain and wine for export. The chief wealth of the country lies, however, in the nitrate deposits found in the barren coastal regions, and especially in the provinces which were taken from Bolivia and Peru. The nitrate is used to fertilize land, and immense quantities are exported every year to this country and to Europe. Chile also has great mineral wealth in her copper and iron mines. Coal is sent to Peru, and silver, lead, tin, and other mines are worked. There are large forests in the southern country, and some of the wood is valuable.

As we have told you in an earlier story, the Spanish conquerors frequently intermarried with the Indians. This was especially the case in Chile, where, within the limits of the Spanish colony, the Araucanian people became fused with the Spanish people into a new race, which forms a large part of the population. About a quarter of the people of Chile

HISTORY MAKING IN CHILE



This beautiful picture shows the ships in Chile's first navy, commanded by Lord Cochrane, a brilliant Irish sailor. These ships took the Chilean ports of Valdivia and Valparaiso from the Spaniards, and carried San Martin and his army to the aid of Peru. As you have read, the army was successful.



When Bernardo O'Higgins, the first president of Chile, found that, if he stayed in power, there would probably be a civil war, he resigned his office and quietly went away to Peru, where he lived till his death. Chile has had fewer revolutions than any other Spanish South American republic.

are of pure Spanish descent, and there are, it is said, about a hundred thousand Indians. Immigrants have begun to go from Europe to the south of Chile, and many Peruvians and Bolivians work in the nitrate mines in the north.

Most of the land in Chile belongs to a very small number of people. Only men who own a certain amount of property can vote, and as a consequence the power lies in the hands of a few men. In spite of the prosperity of the country, most of the people are very ignorant and very poor. Education is free, but it is not compulsory, and more than half the people in the country have never been to school. Military service is compulsory, however, and the boys who have been drafted are compelled to go to school and at least learn to read and write.

THE DISCOVERY OF BRAZIL BY CABRAL

Perhaps you have wondered how it was that although the king of Spain claimed all the Western World, he allowed the Portuguese to make peaceable settlements in Brazil. This is a question that brings up a story so interesting that we shall tell it to you here before we go on to the real story of Brazil.

About the time that Columbus discovered America, the Portuguese were the great explorers of the world, and had already worked their way far down the coast of Africa in an endeavor to find their way to India by sea. When Spain took up the work of exploration, and Columbus discovered what seemed to be a new way to India from the west, the Pope feared that these two nations might quarrel over their discoveries and go to war. To avoid such a catastrophe he drew a line on the map, about a hundred miles west of the Cape Verde Islands, and said that the Spanish must not attempt to explore to the east of this line, nor the Portuguese to the west of it. Portugal was not satisfied with this rule, however, and so a treaty was made between the two countries, which provided that the line should be drawn about eight hundred miles farther to the west. This imaginary line, which is very famous in history as the Papal Line of Demarcation, ran about fifty degrees west of Greenwich.

At the time the treaty was made no one knew that the continent of South America existed. It was discovered

shortly afterward, and the Spanish people claim that Brazil was discovered by a captain named Vicente Pinzon, in 1500. The Portuguese, however, claim that the Brazilian coast was first seen in the same year by Pedro Alvarez Cabral, and it is this great man whom the Brazilians honor for the discovery. Cabral, who was on his way to India, found Brazil by sailing too far to the west. He knew that he had made an important discovery, and before he set sail again for India he sent a ship home to tell the king of Portugal that he had found a rich country, inhabited only by naked savages.

The king was quick to take advantage of the new discovery, especially as Vasco da Gama found that the land lay a long way to the southward. Navigators of course were able to assure the king that the land lay to the east of the Line of Demarcation, and as they had the right to make settlements, the Portuguese began to send out colonies. The first colony was established in 1503, south of Bahia. A short time later another settlement was made on the Bay of Bahia itself, and these colonies became centres from which other settlements were made.

STORMY DAYS IN THE YOUNG COLONY

The early days of Portuguese occupation of the country were stormy, for the French and Dutch both tried to take part of the coast and build up colonies. The first comers were the French, who discovered the bay of Rio de Janeiro and made a settlement there. It took some time to get rid of them, but at last they were driven out. The young country might then have been left in peace, but unfortunately King Philip II of Spain became king of Portugal. Now both England and Holland were fighting against Philip, and once Portugal became part of his dominions, they began to look on Brazil as another place where they might carry on their war against him. The English made raids on the towns, but the Dutch were more persistent, and made every effort to drive out the Portuguese. A Dutch fleet actually captured Bahia, the capital of the colony, in 1624, and kept possession of it for more than a year before it was retaken. A few years later the Dutch sent out another expedition, this time against the province of Pernambuco. Of this province they made themselves masters, and not only

GROWING BANANAS AND TOBACCO IN BRAZIL



Bananas grow abundantly in Brazil, and large quantities are exported, principally to the cities in Uruguay and Argentina. This picture shows a banana plantation—called a “bananal”—when the plants are young and look like clumps of graceful ferns. Because of the heavy rainfall, the banana plantations in Brazil do not need to be irrigated. The plants die down after the fruit is cut.



Tobacco is grown in Brazil, principally in the state of Bahia, the state in which the Portuguese made their first settlement. In this picture the men are cutting tobacco, to be dried and tied into bales, which are sent to the cigar factories, or exported. Cigar making is an important industry in Brazil, and supplies work for many people. The tobacco, however, is not so good as that grown in the West Indies.

held it for years, but obtained a heavy ransom for it, after they had been defeated by the Brazilians in a sharp war.

Meantime the Brazilians had been spreading their settlements southward, and in the eighteenth century they came into touch with the Spanish colonies. You can understand that the southern part of the continent is more suitable as a dwelling place for white people than the north, and realizing this, the Brazilians tried to gain possession of the country as far as the River Uruguay and the Rio de la Plata. The Spaniards resisted, and there was a constant struggle between them for Uruguay. While the Spanish colonies were fighting for independence, Brazil succeeded in gaining possession of Uruguay, although that little country made a great fight for freedom under her brave leader, Artigas, and others. Finally, as we have told you on page 4610, after a war between Argentina and Brazil, Uruguay obtained her independence.

HOW BRAZIL BECAME AN EMPIRE

Before this war, events of great importance had happened in Brazil, where the Napoleonic Wars had just as much influence as in the Spanish colonies, but in quite a different way. In 1807, when Napoleon sent an army to conquer Portugal, the country was not ready for war, and the French army marched so rapidly on Lisbon, that the regent, Prince John, had to escape by sea, taking his mother, Queen Maria, and his wife and family with him. He had nowhere to go in Europe, so he sailed to Brazil, and made the city of Rio de Janeiro the seat of the government. This action made a great deal of difference to the country. From being a colony with all sorts of restrictions in its trade and commerce, it at once became a centre of activity. Free trade was allowed with other countries. Prince John declared that Brazil was henceforth a kingdom, and after the death of the invalid Queen Maria, he was crowned king in Rio de Janeiro.

But when Portugal was freed from the French armies, King John went back to Europe, leaving his son Pedro as governor. This did not please the Brazilians at all. They refused to again become subject to Portugal, and in 1822 they declared Brazil an empire, with Prince Pedro as the first emperor. There was

a little fighting, but on the whole it was a peaceful revolution, and the next year the emperor was crowned as Pedro I. He tried to rule with wisdom, and gave the country a good constitution. But for various reasons his ideas became less liberal, and partly because of this, and partly because all hope of keeping Uruguay was lost, he became very unpopular. Helped by his unpopularity, republican ideas began to spread, and to avoid the danger of a revolution, Pedro I abdicated the throne in favor of his little son, a boy of five years old, and left the country forever.

THE EMPIRE TURNED ITSELF INTO A REPUBLIC

Pedro II was at once proclaimed emperor, and the government was carried on by regents until he was fifteen years old, when he was declared to be of age. In spite of his youth, he proved to be a wise and liberal ruler, and during his long reign, Brazil grew slowly in importance. He was much beloved, but his only daughter, the Princess Isabel, who was to succeed him, was not liked. The people determined that she should not rule, and in 1889 the empire was overthrown and a republic declared. Pedro had been declared of age in 1840, so that he had actually ruled for forty-eight years. Slavery in Brazil was abolished in the last year of his reign.

The new republic went through the usual period of unrest and civil war that a revolution nearly always brings, but it did not last as long in Brazil as in the other South American republics. Troubles with Great Britain and Bolivia about boundary questions were settled by arbitration, and on the whole the course of the republic has been fairly peaceful.

Brazil has manufactories which are able to supply the people with much of their needs in sugar, cotton materials, and some other things. She has not yet become a manufacturing country, however, and most of her exports are products of the field, the forest and the mine. A large part of the coffee and rubber used in the world comes from Brazil, and it also exports a quantity of cocoa. A large part of the Amazon plain is covered with forest, in which many trees are found which are valuable for their timber. Gold and diamonds are exported from Brazil; manganese, a mineral which is of great importance in metal working,

is found in large quantities; there are large coal beds in the southern parts of the highlands, though the coal is not of good quality; iron is found, and has been mined, and lead, copper, zinc, and quicksilver, marble, salt and kaolin make up the list of minerals found in the country.

The rivers of the highlands give plenty of water power, and southern Brazil may one day be a mining and manufacturing country. This would be impossible in the north, where the climate is too hot

great many of the people are descended from Indians and negroes. Immigration into Brazil is large and is made up chiefly of Italians, Portuguese, Spaniards and Germans.

About four-fifths of these millions of people are illiterate; that is to say, only two out of every ten of the population have had any education at all. Most of the Indian tribes are as wild and uncivilized as they were when the Portuguese first entered the country, and of



In 1902 war between Chile and Argentina over the southern boundary line was threatened. To remove the danger, President Roca of Argentina and President Errázuriz met on board a Chilean warship at Punta Arenas. An agreement to arbitrate the boundary was made, and the foundation was laid for a friendship, in which Brazil joined. This friendship is called the A. B. C. alliance.

and damp to make it possible for white men to work in comfort.

THE PEOPLE WHO LIVE IN BRAZIL

The population of Brazil is said to be about twenty-five million, and of this number only about two million and a half are Indians. There are about three million and a half negroes, so you see they greatly outnumber the Indians. Half the population is said to be white, but most of the early Portuguese settlers intermarried with the Indians, and the greater number of the old Brazilian families have had Indian ancestors. A

course they are counted among the numbers of illiterate people. A large proportion of the negroes and mixed races also raise the numbers, and probably many of the immigrants from the south of Europe have had little chance of gaining education. The primary schools are free, but education is not compulsory, and we all know that few boys and girls will go to school unless they are compelled. Fathers and mothers who do not read and write themselves seldom realize how very necessary education is to make the mind grow with the body.

THE NEXT STORY OF COUNTRIES IS ON PAGE 5455.

THE CATHERINE, OUTWARD BOUND FROM GLOUCESTER



This is the Catherine, one of the largest and finest of the Gloucester fishing fleet, outward bound with all sails set. The schooner We're Here, of which we read in the story, was smaller than this magnificent vessel, but both do their part in bringing in food from the sea. As meat grows scarcer and more expensive we must learn to get a larger part of our food from the sea, which offers such a vast supply. American people do not eat as much fish as they should. There are many kinds of fish which are good food which we do not eat at all. The United States Bureau of Fisheries is trying to teach the people something about them, and is meeting with success. Picture by courtesy of Gloucester Board of Trade.

The Story of FAMOUS BOOKS

WHAT THIS STORY TELLS US

RUDYARD KIPLING is perhaps one of the greatest of later nineteenth century writers. He was born in India, and is at his best telling of that country, whether it be the India of the Anglo-Indian, or the mysterious India of the native. He has, in fact, done for India what Sir Walter Scott in a different way did for the Scottish Highlands. In many of his poems he has voiced the feelings of different parts of the British Empire so well as to be styled "the Laureate of the Empire." In one of his several tours round the world he visited the United States. He married an American and lived in Vermont for four years. In this story of "Captains Courageous" we have a vivid picture of one of the chief industries of the United States, the cod fishing on the Grand Bank of Newfoundland—Gloucester in Massachusetts, alone, has 5,000 men employed in these fisheries. The fishing fleet arrives on the fishing grounds early in May, and through the long summer days follow the cod, until they secure a full cargo.

CAPTAINS COURAGEOUS

IN the smoking-room of a great Atlantic liner steaming at half-speed through the fog on the Banks of Newfoundland, sat some five or six men. In the intervals between smoking and listening to the whistle warning the fishing fleet, they were discussing a fellow passenger. Judging by their talk the absent boy was not popular; "the biggest nuisance aboard," "too fresh," "in need of a rope's end," were some of the remarks made about him. One, only, of the smokers, a man from New York, was wise enough to see that the lad's faults were the results of foolish upbringing rather than the outcome of a bad nature. His father, a rich Western millionaire, owning half a dozen railroads and much of the lumber on the Pacific slope, had been too busy to look after his son, and his wife had taken him around from place to place in search of amusement. The liner even then was bearing him across the ocean to complete his education, and "when he's finished in Europe he'll be a holy terror. 'Pity, because there's a heap of good in the boy if you could get at it."

Just then Harvey Cheyne, the subject of their talk, came in—leaving the door open as usual. He was a slight, slim-built boy, about fifteen years old,

Continued from 5261



dressed in a cherry-colored blazer, knickerbockers, red stockings and brown shoes, with a red flannel cap at the back of his head. Making himself quite at home among the men, and with a great deal of unnecessary noise, he reported on the thick fog outside. "You can hear the fish-boats squawking all round us. Say, wouldn't it be great if we ran down one?" Unabashed by the snubbing he received from one and all, he accepted a shiny black cigar from a man who was disgusted with him. The black cigar worked quickly, and Harvey with a muttered excuse staggered out of the smoking-room to the nearest rail. He was very unhappy, but mustered up enough pride to retire to the deserted second-class deck at the stern, and there he doubled up in limp agony, and rolled where the ship pitched him, for the cigar and seasickness combined made him faint.

Then a low, gray mother-wave swung out of the fog, and swept him quietly overboard, into the green depths of the sea.

When he awoke he was in a dory, belonging to the schooner We're Here of Gloucester. Manuel, the oarsman, had caught him out of the sea from under the liner where he had nar-

rowly escaped being cut up by her screws. Harvey was still dazed and sick when he was handed on to something bigger than the dory, given a hot drink, and dropped into a dark hole, where he fell asleep. His second awakening was to feelings of disgust; instead of a comfortable stateroom he found himself in what seemed a narrow triangular cave, lit by a lamp, and packed as full of smells as a bale is of cotton. About him he heard the rush of water and the creaking of beams, and under him felt the irregular motion of a sailing boat riding at anchor. Very ungraciously, he accepted breakfast—coffee sweetened with molasses and crisp fried pork—from the only other occupant of the cabin, a boy about his own age possessed of a flat red face and a pair of twinkling gray eyes. Dan, as he introduced himself, brought Harvey his clothes, which he had dried, and advised him to hurry dressing and go on deck to see "Dad." Hoisting himself up a perpendicular ladder, Harvey stumbled aft to where sat a thick-set clean-shaven man with gray eyebrows. "Mornin'—good afternoon, I should say. You've nigh slep' the clock around, young feller," was the greeting. "Mornin'," said Harvey. He did not like being called "young feller," and, as one rescued from drowning, expected sympathy. His mother suffered agonies whenever he got his feet wet, but this mariner did not seem excited.

HARVEY IS QUESTIONED ABOUT HIS MISFORTUNE

"Naow let's hear all about it. It's quite providential, first an' last, fer all concerned. What might be your name? Where from (we mistrust it's Noo York), an' where baound (we mistrust it's Europe)?"

Harvey gave his name and a short history of the accident, demanding grandly at the end—for he was all the son Harvey Cheyne had—to be taken back immediately to New York. To his anger and amazement the skipper—Troop by name—took the story very calmly, even disbelieved the "grand part," and flatly refused to put back to land. The crew of the We're Here had just come on the Banks for their season's fishing, upon which the living of all the men depended. They would not go ashore till early in September,

and until then Harvey could make himself very useful, for ten and a half a month—with all found. "Do you mean I'm to clean pots and pans and things?" said Harvey. "An' other things. You've no call to shout, young feller." "I won't. My father will give you enough to buy this dirty little fish-kettle"—Harvey stamped on the deck—"ten times over if you take me to New York safe," and then he accused the captain of having stolen a large sum of money which he had in his pocket when he fell overboard.

He did not exactly remember what followed. He was lying in the scuppers, holding on to a nose that bled, while Dan strove to comfort him. The blood-letting cleared his brain, and the loneliness of the sea, and a comforting talk he had with Dan, who was beginning to believe what he told him, brought him around to a sense of the ingratitude he had shown to those who had saved him from drowning. With this in mind he sought out the skipper and apologized for his rudeness. Troop heaved off the locker he was sitting on and held out an eleven-inch hand completely ready to forget and forgive.

HARVEY HAS A FIRST LESSON—FISHING

At sunset that night, the dories belonging to all the schooners on the fishing banks crept back to their ships, and Harvey, coached by Dan, did his share in hoisting in the boats and then swabbing them out. In spite of himself he was interested in the crew who were to be his companions through the next four months. A delicious supper of cods' tongues and sounds, mixed with scraps of pork and fried potato, a loaf of hot bread, and black and powerful coffee, made him feel still better, and then Harvey was present at the dressing down of the fish, as they were cleaned, salted and stowed away down in the hold. Not until the day's catch were so disposed of did the tired men go down to their bunks. "Boys clean up after dressin' down, an' first watch in ca'am weather is boy's watch on the We're Here," quoth Dan. So for an hour the moon shone down on a slim youth in knickerbockers and a red jersey, staggering around the decks of a seventy-ton schooner, while behind him, waving a knotted rope, walked a

boy who yawned and nodded between the blows he dealt. At last the clock in the cabin struck ten, and upon the tenth stroke the next man on watch crept on deck. He found two boys in tumbled heaps side by side so deeply asleep that he actually rolled them to their berths.

THE BOYS FIND AMUSEMENT IN SPITE OF THE HARD WORK

After his first eventful day aboard the schooner *We're Here* of the Gloucester fishing fleet, Harvey quickly fitted himself to the life around him. The man from New York proved himself right when he had said there was a "heap of good in the boy if you could get at it." Of course he made mistakes, as, for instance, when he told boasting stories of what he had done as a millionaire's spoiled child, thinking thereby to impress Manuel and the cook, and Saltus and José. Or when he started rowing in Dan's little red dory, the *Hatty S.*, in a way that had been quite useful in the Adirondack ponds, but which took no account of the swells on the sea and so brought him a crack under the chin and a tumble into the bottom of the boat. But he was a smart boy, the son of a clever man and a sensitive woman, with a fine resolute temper, and took the crew's rough teaching so quickly and withal cheerfully that he soon won their respect. Dan and he became great chums; they worked together—and there was lots to do, from cleaning fish and swabbing the fo'c'sle to setting the table and filling the lamps. They fished together from Dan's little red dory or in more serious spirit from the boat itself; and together geyed the cook or hooked fried pies out of the locker.

Disko Troop was no common sort of skipper, and when too many other schooners came to ground he had chosen, and the fish ran small he decided to draw away and find another place, till it was time to go up to the Virgin Rock. For a while he sat and thought of the weather, and gales, currents, food-supplies and other domestic arrangements from the point of view of a twenty-pound cod, and when the Bank fog dropped down on them he heaved up the anchor of the *We're Here*, looked up into the wind, and dived off into blank, whirling white. When

they came to waters where the cod were bigger and covered with little crabs and swallowed the bait—sure sign that they were both herding together and hungry—they dropped anchor once again, and set out trawls. Trawls are long lines, with buoys at the end to keep them from sinking too deep. Dark though it was when they made their berth, the boys had to bait the trawl-lines with selected offal from the cod. Dan managed it in the dark without looking, but Harvey caught his fingers on the barbs and bewailed his fate. Then while Tom Plate and Long Jack went out in the dory to set the trawls, Harvey rang a little bell to guide them safe back to the schooner. It was his first experience of trawling and he was very weary before the time came for supper and bed.

WHAT THEY DID WHEN THEY COULD NOT FISH

The fair weather was gone when the boys waked next morning. Heavy seas were running and a thick fog blew before the wind. But the fo'c'sle shut itself up tight and snug, lay in its bunks, and sang and played and yarned till Harvey knew something of the queer superstitions of the sea, and something moreover of the musical tastes of the fishermen on the Banks.

When the fog lifted, and the seas began to oil over, they sighted another sail, which as it came near turned out to be an old trawler from the Newfoundland beaches, owned by a certain "Uncle Abishai" whom the fishermen held to be a Jonah of the seas, for the ill-luck that he brought. Mutual insults were exchanged as the untidy craft drifted down the wind, but all the crew of the *We're Here* wished they had not set eyes upon the trawler. Suddenly a little later, and some three or four miles distant in a patch of watery sunshine, they saw her drop into a hollow—and then disappear. Jerking up the anchor and running down to where the craft had vanished they found two or three tubs, a gin bottle, and a broken dory, but nothing more.

Harvey could not realize that he had seen death upon the waters but he felt very sick. Then they steered back to within sight of their own trawl-buoys just before the fog blanketed the sea once again, and Disko worked all hands.

THE SPOILED BOY BECOMES MORE MANLY

And so the days went on, and the boy was so busy that he did not do much thinking. He felt very sorry for his mother and often longed to see her, and above all to tell her of his wonderful new life, and how well he was doing in it. He was now an accepted part of the life on board the schooner; had his place at the table and among the bunks, and could hold his own in the long talks on stormy days.

Disko moved the We're Here from berth to berth on the Grand Bank following the fish over a waste of wallowing sea, often cloaked with dark fog and vexed with gales, harried with drifting ice and scored by the tracks of reckless liners. Sometimes for days at a time they fished in the fog. At first, until he gained courage, Harvey remained at the bell aboard the We're Here, but growing bolder he went out in the dory with the men. One day their anchor could find no bottom and he grew mortally afraid, for they were on the edge of the barren whale-deep, the black hole of the Grand Bank. Then they made another berth through the fog, and that time Harvey's hair stood up and he cowered in the bottom of the little boat, as a whiteness moved past them with a breath like the breath of the grave, and the summer iceberg of the Banks roared, plunged and spouted beside them.

THE WE'RE HERE IS ALMOST RUN DOWN

And while Harvey was taking in knowledge of new things at every pore and health with every gulp of the good air, the We're Here went her ways and did her business on the Bank, and the fish mounted higher and higher in the hold. Disko had a great reputation as a fisherman so that he was closely followed by other schooners, but he had a way of giving them the slip through the curtains of the fog, for he wanted to make his own experiments and disliked the mixed gathering of a fleet of all nations. One night, a little before dawn in a thick, milky fog, they heard the muffled shriek of a liner's siren, and Harvey, ringing the little bell, remembered how once—it seemed a long while ago—as a passenger he had thought it

would be "great to run down a squawking fishing boat." Then he was suddenly conscious of a clifflike bow leaping, it seemed, directly over the schooner; and then a line of bright portholes, and rough water under the screw as the big liner slipped into the fog. Feeling sick and faint he heard a far-off voice drawling "Heave to! You've sunk us!"

"Is it us?" he gasped.

"No! Boat out yonder. Ring! We're goin' to look," said Dan, running out a dory.

But though the crew of the We're Here went overboard with a will, they only returned with one man from the little Jennie Cushman. It was the skipper, wild-eyed, trembling, who in thirty seconds had lost his only son, his summer's work and his means of livelihood. There seemed none aboard who could comfort him save little Pennsylvania Pratt—half-wit and butt of the ship—who had been silly ever since he saw his wife and children drowned before his eyes. The shock of the accident and its likeness to his own trouble for a time restored Pratt's reason and he set to praying that poor Jason Olley might find his son again, while the others stood helpless. It seemed in direct answer to his prayer that shortly a schooner's bell struck up alongside and a voice hailed Disko through the fog, saying that they had picked up young Olley, unharmed save that his head was "cut some." Penn waked the father from his stupor of despair and one of the men rowed him over. He went away without a word of thanks, not knowing what was to come; and the fog closed over all.

THE SCHOONER IS ALMOST FULL OF FISH

Their last berth for the season was beside the "Virgin," a lonely rock rising to within twenty feet of the surface, which in fair weather showed a stretch of smooth greenish sea. When a swell came on the Virgin broke about every fifteen minutes; that is, the swell in its under-run hit up against the rock like a man tripping on a carpet, and with a sob and a gathering roar the rock would fling up a couple of acres of foaming water, white and furious, in which no dory could live. The cod were thick here, running in shoals, and when they bit, they bit all together;

and so when they stopped. Up to this time, owing to Disko's care, they had fished alone, only now and then meeting other boats, and having little to do with them beyond an exchange of "baccy" or chaff. But now things were different. There were three fleets of anchored schooners—nearly a hundred of them, of every possible make and build—and when the dories went out to fish they went with a mob of other boats and waited for the shoal of fish, and when it came, pushed frantically into the midst of it and spooned up the cod with landing-nets. The life was different, too; for the fleets made a regular town, and gossip, song, and jest, and the daily happenings on each boat were exchanged freely when rush hours of fishing and cleaning down were over. Once, Dan and Harvey were lost in the little red dory in a sudden fog which drifted down over the sea, but the cook, born and bred in fogs, searched for them and brought them safe back to the ship.

THE GLAD NEWS REACHES THE PARENTS

The We're Here was racing neck and neck with another boat, for her last few fish, and all hands worked at the lines or dressing down till they fell asleep where they stood—beginning before dawn and ending when it was too dark to see. At last, the schooner cleared decks, hoisted her flag—as is the right of the first boat off the Banks—up anchored and began to move. The land with its familiar smells and noises was reached at length and just as the dawn was breaking one hot night after a summer storm, they made fast to a silent wharf. Dan and the men of the We're Here were at home and with those they knew—for most of them lived in Gloucester—but for a while Harvey was a very lonely boy, till he and Dan made up a telegram to his father and sent it off in secret as a surprise for Disko. Harvey's telegram ran:

Picked up by fishing schooner We're Here having fallen off boat great times on Banks fishing all well waiting Gloucester, Mass. care Disko Troop for money orders wire what shall do and how is Mama Harvey V. Cheyne.

Mrs. Cheyne was very ill when Harvey's father got this telegram—as

indeed she had been ever since the accident long weeks before. But joy does not kill, though in her desire to cover the ground she nearly wore out her husband and the crew of the special train which conveyed their private car, the Constance, over the miles between San Diego and Gloucester.

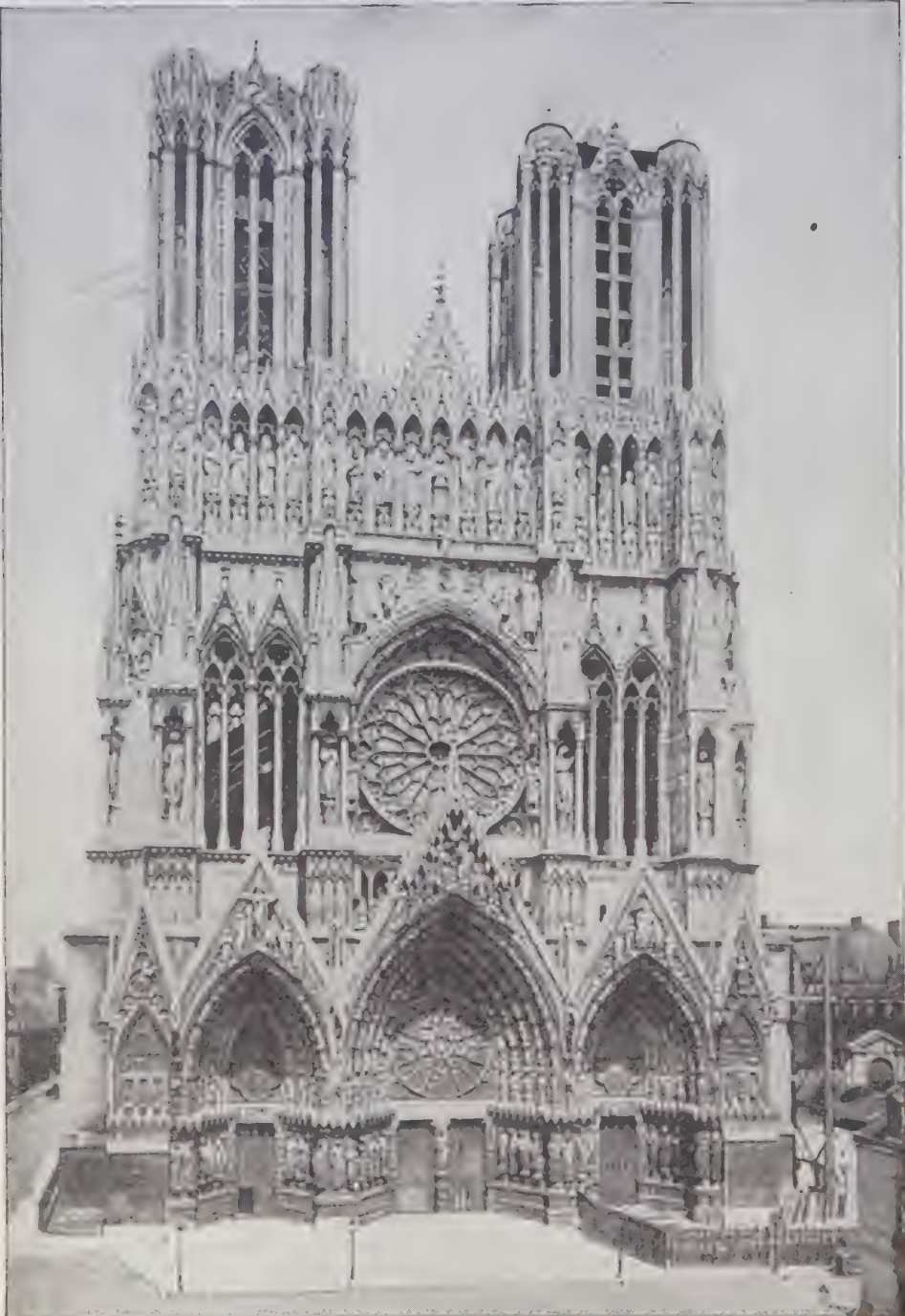
WHAT THE TRIP HAD DONE FOR THE BOY

They found the boy waiting for them, and it seemed to the father, watching keenly, that a new and vastly improved Harvey—who did not wriggle or whine, who looked at him with steady eyes, who spoke in a distinctly respectful tone—had come to stay. The Cheynes lingered in Gloucester for some days, doing what they could to reward the men of the We're Here. The weary millionaire enjoyed the direct and simple fisherman and the bustle of the breezy port as he had not enjoyed a holiday for years. He made friends with this new son of his, too, and told him—what Harvey had never cared to know before—the story of his own hard life and final success. It thrilled Harvey off-the-Banks as it never would have stirred Harvey from-the-Adirondack-summer-camp, and he was all for starting in at once to work in his father's office. But Cheyne showed him that the better plan, and one that would help both of them most, would be for him to take a college course for the next four years—and then he would be fitted to take over his father's newly purchased ships—the Blue M. Freighters—running with tea between Yokohama and San Francisco. It was arranged also, to Harvey's keen delight, that after the winter, Dan was to ship aboard the packets, and if he so liked, eventually become an officer. It was all Disko would accept; Manuel, who had first found Harvey, with great difficulty was induced to take five dollars. It was otherwise with the We're Here silent cook, for he came up with his bit in a handkerchief and boarded the Constance, determined to follow Harvey for the rest of his days.

Here we must leave Harvey and Dan, except for a glimpse of them later, when Dan was on the sea and Harvey was following his father's wishes and devoting his time to study.

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 5467.

WHERE FRANCE'S KINGS WERE CROWNED



This is the beautiful western front of Rheims Cathedral, which has been called "the heart of France." The picture shows the deeply arched portals, with their many statues, sharply pointed gables, and graceful pinnacles; the gallery of the kings, with Charlemagne standing in his niche above them; and the beauty of the twin towers. But no picture can give even a hint of the beauty of the great rose window, which was a perfect rose of priceless stained glass, set in a delicate tracery of richly carved stonework. The cathedral was begun in 1212, and the building of the stately edifice took nearly 300 years. Through its great portals went the long line of the kings of France for their coronation; the rich light from its great windows fell softly on Joan of Arc. During the Great War, it was set on fire by the German bombardment, and ruined.

The Book of STORIES

THE STORY OF A BEAUTIFUL THING

OUR general notion of a Last Will is not that it is a beautiful thing. Some of us, perhaps, have never seen a will; and many of us who have, did not possess enough patience to read it to the end, for we found the legal terms long and tedious. A will is often only of interest to the friends and relations of the man who made it, for it tells them how their friend or relative wanted his property bestowed. "The Last Will of Charles Lounsbury" concerns us all, for it disposes of the best things that belong to all.

A man does not need to have many possessions to be rich. We are rich by being alive. We may walk penniless in a country lane with all the real wealth of the world; we may be millionaires at the bank and poor in all that is real wealth. Read the will and see how much you want to inherit, for there are great riches to be had. The writer is Mr. Williston Fish, of Chicago, a man of great reputation in law and finance in that city. Charles Lounsbury was a "big, good man" far back in Mr. Fish's family, and so Mr. Fish gave his name to the "Will."

THE LAST WILL OF CHARLES LOUNSBURY

HE was stronger and cleverer, no doubt, than other men, and in many broad lines of business had grown rich, until his wealth exceeded exaggeration. One morning, in his office, he directed a request to his confidential lawyer to come to him in the afternoon; he intended to have his will drawn. A will is a solemn matter, even with men whose life is given up to business, and who are by habit mindful of the future. After giving this direction, he took up no other matter, but sat at his desk alone and in silence.

It was a day when summer was first new. The pale leaves upon the trees were starting forth upon the yet unbending branches. The grass in the parks had a freshness in its green like the freshness of the blue in the sky, and of the yellow of the sun—a freshness to make one wish that life might renew its youth. The clear breezes from the south wanted about, and then were still, as if loth to go finally away.

Half idly, half thoughtfully, the rich man wrote upon the white paper before him, beginning with capital letters, such as he had not made since, as a boy in school, he had taken pride in his skill with the pen:

IN THE NAME OF GOD, AMEN.

I, CHARLES LOUNSBURY, being of

CONTINUED FROM 5288



sound and disposing mind and memory—he lingered on the word memory—do

now make and publish this my last will and testament, in order, as justly as I may, to distribute my interests in the world among succeeding men and women.

And first, that part of my interests which is known among men and recognized in the sheep-bound volumes of the law as my property, being inconsiderable and of no account, I make no account of in this my will.

My right to live, it being but a life estate, is not at my disposal, but, these things excepted, all else in the world I now proceed to devise and bequeath.

And first, I give to good fathers and mothers, but in trust for their children, all good little words of praise and all quaint pet names, and I charge said parents to use them justly, but generously, as the needs of their children shall require.

I leave to children exclusively, but only for the life of their childhood, all and every, the dandelions of the fields and the daisies thereof, with the right to play among them freely, according to the custom of children, warning them at the same time against the thistles. And I devise to children the yellow shores of creeks

and the golden sands beneath the waters thereof, with the dragon-flies that skim the surface of said waters, and the odors of the willows that dip into said waters, and the white clouds that float high over the giant trees.

And I leave to children the long, long days to be merry in, in a thousand ways, and the Night, and the Moon, and the train of the Milky Way to wonder at, but subject, nevertheless, to the rights hereinafter given to lovers; and I give to each child the right to choose a star that shall be his, and I direct that the child's father shall tell him the name of the said star in order that the child shall always remember the name of that star after he has learned and forgotten astronomy.

I devise to boys jointly all the useful idle fields and commons where ball may be played, and all snow-clad hills where one may coast, and all streams and ponds where one may skate, to have and to hold the same for the period of their boyhood. And all meadows, with the clover-blooms and butterflies thereof; and all woods, with their appurtenances of squirrels, and whirring birds, and echoes, and strange noises; and all distant places which may be visited, together with the adventures there found, I do give to said boys to be theirs. And I give to said boys each his own place at the fireside at night, with all

pictures that may be seen in the burning wood or coal, to enjoy without let or hindrance, and without any incumbrance of cares.

To lovers I devise their imaginary world, with whatever they may need, as the stars of the sky, the red, red roses by the wall, the snow of the hawthorn, the sweet strains of music, or aught else they may desire to figure to each other the lastingness and beauty of their love.

To young men jointly, being joined in a brave, mad crowd, I devise and bequeath all boisterous, inspiring sports of rivalry. I give to them the disdain of weakness, and undaunted confidence in their own strength. Though they are rude and rough, I leave to them alone the power of making lasting friendships, and of possessing companions, and to them I give all merry songs and brave choruses to sing, with smooth voices to troll them forth.

And to those who are no longer children, or youths, or lovers, I leave Memory, and I leave to them the volumes of the poems of Burns and Shakespeare, and of other poets, if there are others, to the end that they may live the old days over again freely and fully, without tithe or diminution; and to those who are no longer children, or youths, or lovers, I leave, too, the knowledge of what a rare, rare world it is.

THE MUSIC OF THE WILLING HEART

A POOR old fiddler was trudging late one night through a forest, when a little man in a red cap met him.

"I want you to come and play at a wedding dance," he said.

"I'm sorry, sir," said the fiddler; "but I am old and rheumatic, and cannot play as I used to play when I was young. My fiddle is old too, and, alas, it is broken, so that I can only make such a screeching noise that people are glad to give me a penny to stop playing and go away."

"Never mind," said the little man. "If you will only play with a willing heart, you'll play well enough!"

He took the old fiddler to a lighted cave in the depth of the wood, and then led him down an underground passage, which opened out into a splendid hall. Hundreds of pretty little fairies came dancing with delight round the poor old fiddler, crying:

"Do play us a waltz! We have

never heard a waltz! Do play for us!" Remembering that it was only a willing heart that they wanted, the old beggar put his old fiddle under his chin and began to play. To his surprise, his arm and fingers became as strong and supple as a young man's, and his broken fiddle gave out a tone of wonderful beauty. Rocking himself to and fro with joy at the fine music which he was making, he played for hours and hours without feeling the least fatigue; and when he had played every tune that he could remember, one of the fairies said:

"Willing heart shall have a willing hand. Henceforward you shall always play as well as you played to-night!"

When the old fiddler woke up next morning, he found that he had become an excellent violinist, and that he had grown about forty years younger; while his cheap fiddle had turned into a magnificent violin with a splendid tone.

ANTONIO'S WONDERFUL LION

ON a summer's day in the year 1787, a small peasant lad was flying along the white, dusty road which led from Venice to the little village of Possagno. In both hands he clasped a big lump of clay, which old Pietro, the potter, had given him.

As the boy, whose name was Antonio, came into the village street, several of his playfellows shouted to him to join their games, but Antonio only fled the faster to his own home.

"Just see, mother!" he cried, holding up his clay. "See what old Pietro has given me! What fine castles and birds and flowers I shall be able to make now!"

Sinking down on the floor, the ten-year-old sculptor set to work, never looking at his dinner.

He was too intent on molding the clay to notice even the arrival of a generally welcome visitor.

The visitor was his mother's cousin, a very grand person, in his own and the villagers' eyes. For he was head cook at the castle, where the senator, Giovanni Falieri, the lord of Possagno, lived in great state. As a rule, Tommaso always brought delightful scraps of broken meat or rich pastry, but to-day he was empty-handed, for he was much too worried to think of anyone but himself. He sat down on one of the rude chairs and, leaning his chin on one hand, gazed moodily around.

"What's the matter, cousin?" asked Antonio's mother.

"Matter enough, I can tell you," was the tart reply. "Just think, the master is giving a large banquet to-morrow night, and has ordered me to invent some decoration for the table that has never been seen before."

"But you're so clever that you're sure to think of something," said his cousin, hoping to cheer him. The fat cook was usually a kind and jovial man, and she hated to see him in despair.

"I can't!" said Tommaso irritably. "That's just my misery, and the time is running so short! The master is tired of my castles and dragons in pastry, and of my sugar birds and trees and flowers; even the life-like chariot that I carved out of a turnip, with rings of carrots for golden wheels, doesn't please him now,

nor yet the upright clock made in sweetmeats. No; nor the almond-paste crown set with its jewels of candied gooseberries and cherries. Oh, what can I do?"

And the wretched man could do nothing but wring his hands in despair, and had no new ideas at all.

"Go on thinking, and you'll get an idea at last," urged Antonio's mother, while Antonio himself was much too busy with his modeling to look or even to speak.

"Go on thinking!" cried Tommaso. "Well, if that's all the help you can give me, I'll be off." And he moved toward the door, brushing past Antonio so roughly that he jerked a beautiful little swan, which the boy had just modeled, out of his hand. Without looking round, he walked gloomily away with his head hanging down.

"Oh, my poor swan; you've quite spoiled it!" cried Antonio sorrowfully. For the swan had struck against the wall and fallen on the floor in a shapeless heap. "Oh, how I detest you!" added the boy angrily, shaking his fist at Tommaso's back.

"Poor man! He's dreadfully worried to-day," said his mother. "You ought to be sorry that you can't help him, for think how often he brings you cakes and tarts."

"So he does!" said Antonio. And from that moment he was lost in deep thought.

Next morning, at sunrise, he was knocking at the kitchen door of the castle.

"Cousin Tommaso," he said, "I've thought of something that I will make for your master's table, something that no one else has ever seen before. Only give me a big block of butter, and a little room where I can be all by myself, and where no one can watch me at my work."

"All right," said the cook. "Of course, you'll only waste the butter; still, you may try."

For more than twelve hours Antonio toiled at the task he had undertaken, Tommaso calling through the door occasionally for news of his wonderful work. Antonio paid no heed to his jeers; but just as the sun began to sink, and the hour



FROM THAT SHAPELESS MASS OF BUTTER A LORDLY LION HAD ARISEN

for the banquet drew near, he flung open the door and displayed his handiwork.

From that shapeless lump of butter a lordly lion had arisen, standing very nearly two feet high! Every detail, from the finely molded muzzle right down to the tip of his tail, was in faultless proportion.

If Tommaso was struck dumb with admiration and surprise, still more so were the host and guests when this masterpiece appeared on the table as its crowning ornament. The lordly lion and the senator's clever cook in consequence were the chief topics discussed at the banquet.

Filled with admiration for his cook's performance, the senator sent for him, and loaded him with praise. To the astonishment of all, however, Tommaso burst into tears.

"Alas!" he wept. "Not I, but another molded that lion."

"Then fetch him here at once," commanded the senator.

Thereupon, to the further bewilderment of that gay company, Tommaso presently reappeared, pushing a very frightened, ragged little peasant boy in front of him. He was too frightened to lift up his eyes, or even to heed what was said about his lion, but from that moment Antonio's fortune was made. The senator apprenticed him to Torretto, the greatest sculptor of the day, and under his care Antonio made such rapid progress that after two years the twelve-year-old sculptor presented his patron with two beautiful baskets in marble filled with exquisitely molded fruits. These same baskets may even now be seen in the Falieri Palace at Venice. For the little barefoot lad developed into the famous Antonio Canova, one of the greatest of the sculptors that the modern world has produced.

THE MAN OF GREAT IMPORTANCE

MANY years ago some soldiers were engaged in the repair of some fortifications. Directing the operations was a pompous little officer, who gave his commands in a very loud voice.

The men were trying to get a beam of timber to the top of a mound, but they were not strong enough. One more pair of arms and the work would have been easy.

Yet the officer did not offer to help in any way. He simply stood and shouted his commands, mixing these with abuse of the soldiers for their failure in the task.

"Now, you fellows," he shouted, "put your backs into it! Heave ho! Don't stand looking at it—move it!"

A gentleman dressed as a civilian, who happened to be walking by, stopped and watched the proceedings, and then asked the officer why he did not help.

"Are you aware who I am, sir?" asked the officer, with indignation and astonishment. "I am a corporal."

"You are not, though, are you?" said the other. "I was not aware of that, and I am sure I beg your pardon."

Then the newcomer threw off his coat, and, going to the little group of perspiring men, lent a hand, so that the timber was soon in position. The officer did not even thank the gentleman for his help, but as the civilian put on his coat again he said quietly:

"The next time you have a task of this kind in hand, sir, and have not enough men, just send to me, and I will come and help."

"May I ask who you are?" inquired the corporal haughtily.

"Yes, sir," replied the gentleman. "You will always find me by addressing a letter or sending a messenger to the headquarters tent. My name is George Washington, and I am commander-in-chief of the army. Good-day, sir!"

The civilian walked away, and the pompous corporal stood still.

PEASANT GIRL AND EMPRESS

THE INNKEEPER'S DAUGHTER WHO SLEEPS IN ROME

UNDER a great dome in the Vatican at Rome are two splendid tombs. One contains the body of the daughter of Constantine; the other is the tomb of St. Helena, the mother of Constantine.

Helena was born quite a poor girl. Her father was a humble innkeeper, and she helped him at the inn, and looked after the cows and goats. The actual place of her birth has for centuries been a subject of dispute. Many authorities believe that she was born in England, but the truth seems to be that her birthplace was a tiny village in Bithynia, an ancient division of Asia Minor. There it was that, in the bloom of her youth and beauty, she was discovered by a great officer of the Roman Empire named Constantius Chlorus. The innkeeper's daughter won the heart of the Roman officer, and, without any thought of rank, he married her.

The great noble and his peasant wife lived very happily together, and in the year 274 she gave birth to a son, who was destined to become the famous Roman emperor, Constantine the Great. Until now the husband of Helena, though distinguished in the state, was only a governor. In the year 292, how-

ever, a terrible sorrow came upon her. The great Roman Empire was divided into four parts, and her husband, Constantius Chlorus, was made the ruler of Gaul, Spain, and Britain. But he had to choose between the wife he loved and the great position now offered to him. The Emperor Maximian, who offered the crown, offered also his daughter Theodora in marriage. A Roman emperor must have a wife of noble birth, and so, to gain the crown, Constantius divorced poor Helena, and married Theodosia.

Constantine was twenty when this happened. He must have been terribly grieved at this slight cast upon the mother he so passionately loved, for he did not accompany his father when he took up his new dignity. He remained with his mother, and later went away as a soldier on his own account, so that he became a famous warrior without any assistance from his father. At last Constantius could bear the separation no longer, and wrote to Constantine begging him to go to him. Constantine went, making a journey full of terrible dangers to meet his father at Boulogne. Together they went to England, and when his father died at York, in 306,

respected and beloved by all in the land. But this Saint Helena, as we now call her, was all this time a pagan. Christians were terribly persecuted in Rome at this time, and she had probably never thought of becoming a Christian. Her conversion was the result of a strange thing which Constantine himself seems to have believed. Before he could bring order and peace to the Roman Empire he had many great battles to fight, and in one of these battles Constantine saw, or believed that he saw, a flaming cross in the sky, and the words displayed across

the heavens: "By this conquer." He regarded this as a sign from heaven, and became a Christian. He then made Christianity the religion of the great Roman Empire, of which he was now master, and the Roman legions in time all carried the cross as their standard. It was the conversion of her son that brought about the conversion of Helena. She came forth from the retirement in which for so long she had lived, and devoted her life to Christian acts. When nearly eighty years old she set out on a pilgrimage to the Holy Land, and discovered what was believed to be the Holy Sepulchre and the Cross. She is said to have had the Cross divided into two parts, one of which she left with the Bishop of Jerusalem and the other she sent to her son. Helena remained in Palestine for some time, and built churches at Bethlehem and on the Mount of Olives. She visited many of the churches of the East, giving liberally to each and bestowing much alms upon the poor wherever she went. At last she returned from her long travels, and died in her son's arms in 328, in the eightieth year of her age.



THE VISION OF ST. HELENA

Constantine had the body of his mother carried in state to Rome, and buried with the highest honors. The poor peasant girl of other days had come from poverty and obscurity into high place as the wife of one of the great men of the empire; next she relapsed into obscurity as complete as that in which her girlhood had been passed. Then, through the affection and respect of her illustrious son, she was made the first lady in the empire and the leading figure in the Christian Church. And at her death she lay amid the greatest figures of the nation

which had ruled all the known world. After her death Helena was canonized by the Church—that is to say, the Church found that she had lived so pure and godly a life that she was to be regarded as a saint. That is why we now call her St. Helena. It is from her that many of our churches take their name. There are many churches bearing her name round about York, where it is held that Constantine was born. Thus we find, among others, churches named after St. Helena at Escrick, Stillingfleet, Wheldrake, Thorganby, and Skipwith.

One strange little irony remains to be noted. Before the Reformation there was in York itself an old church built on the city wall. In that church lay the body of Constantius Chlorus, father of Constantine the Great and husband of St. Helena. But no one ever thought of him. It was of the good peasant woman that they thought. They called the church St. Helena's, and never gave a thought to the dead emperor sleeping in the casket within the church bearing the name of the poor woman whom, in the hour of his triumph, he despised, thinking himself far above her.

GELERT, THE FAITHFUL DOG

KING JOHN of England had not much affection to spare for anyone. But there were two beings he really loved—his beautiful daughter, Joan, and his splendid greyhound, Gelert. And when Joan married Llewelyn, the Prince of Wales, he gave them Gelert as a wedding gift. Prince Llewelyn was a great hunter, and he, too, soon became much attached to the noble hound.

The first day he took Gelert out with him, the greyhound chased a stag from Carnarvon to a rock—which is now called Beth Gelert—where the stag fell dead from exhaustion.

Gelert was always the first hound to appear when Prince Llewelyn blew his hunting-horn at the castle gate. But one morning the greyhound did not answer the call. Putting the horn to his lips, the prince again blew long and loudly, and then called, "Gelert, Gelert!" But the hound did not come, and, being unable to wait any longer, his master rode off to the hunt.

That day, however, he had little sport, for Gelert was not there. Tired, disappointed, and angry, he returned to his castle, and as he entered the gate the dog came bounding out with his mouth dripping with blood. There was a strange look in the eyes of the hound, which told the prince that something dreadful had occurred.

"Has he gone mad, and killed somebody?" he exclaimed.

A terrible suspicion flashed across his mind. Princess Joan had a little son a year old, and when Gelert was not out hunting he was always to be

found by the child's side. Prince Llewelyn rushed toward the room where his baby had been sleeping, and the hound followed him. A trail of blood led to the room. The prince drew his sword as he entered, and then recoiled in terror. There was a pool of blood on the floor, an empty, overturned cradle, and no sign anywhere of the child. Crouching down by the cradle, with a look of entreaty, Gelert began to whine.

Blind with rage, Prince Llewelyn turned upon him with uplifted sword, and thrust it through his heart, crying:

"Monster, you have devoured my son!"

Giving a wild yell, the greyhound expired with his eyes fixed on his master's face. His dying yell was answered by a cry from beneath the cradle, and there Llewelyn found his little son unharmed, with its sleepy head resting on the body of a dead wolf. Now that it was too late, Llewelyn saw why Gelert had not come that morning when he sounded his horn. The wise and faithful hound had smelt out the wolf, and had fought and killed the fierce beast.

The prince was now broken-hearted. "Although I cannot bring you to life, Gelert," said he, sadly, "I can keep alive the memory of your noble deed."

He buried the faithful dog by the rock where the stag that Gelert had chased from Carnarvon had fallen, and for hundreds of years people passing by the grave threw on it a stone, and the cairn they made is still called Beth Gelert, or the Grave of Gelert.

LE MALIN FERMIER ET LE NAIN

THE ENGLISH VERSION OF THIS STORY IS GIVEN ON PAGE 4860.

UN fermier qui possédait une petite colline sur ses terres, ayant décidé qu'elle ne devait pas servir à rien, se mit à la labourer. Aussitôt un nain qui l'habitait en sortit et, furieux, demanda au fermier de quel droit il osait déranger son repos en labourant le toit de sa demeure. Le fermier s'excusa humblement, mais remarqua qu'il serait dans l'intérêt de tous deux que la colline fût labourée et qu'on y récolte une moisson.

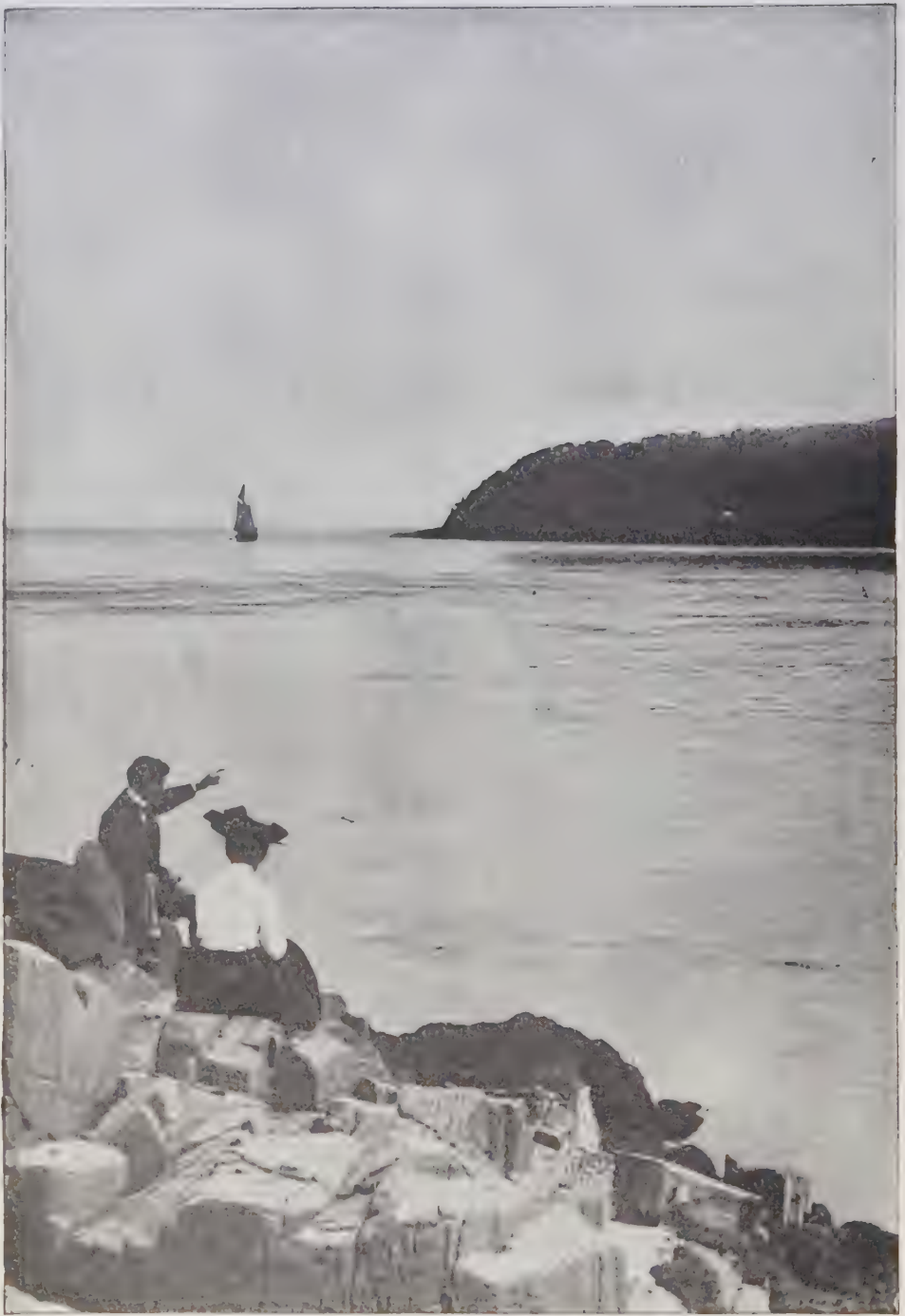
Le nain refusa d'abord, mais le fermier fit de son mieux pour le convaincre. Il proposa de tout faire lui-

même à la condition que le nain consentit à ce que, la première année, tout ce qui pousserait au-dessus du sol fût au fermier, et tout ce qui serait dessous au nain; et la seconde année, ce qui serait au-dessous, au fermier, et au-dessus, au nain.

Le nain consentit à cet arrangement; mais le malin fermier planta du blé la première année et abandonna les racines au nain, tandis qu'il prenait le grain lui-même; et la seconde année, il planta des carottes, qu'il récolta en laissant au nain le feuillage inutile.

THE NEXT STORIES ARE ON PAGE 5473.

A BEAUTIFUL SCENE IN NOVA SCOTIA



In this picture, we look across from one side to the other of the narrow passage which leads from the Bay of Fundy into Annapolis Bay. Annapolis, about half way up the bay, is the oldest settlement in America north of Florida. The Acadians were taken from this port on their banishment, and the country around is full of Acadian memories. Digby Gut, as the passage is called, is only half a mile wide, but is two miles long, and the tide rushes through the narrow passage with tremendous speed. The trees, as you can see, grow down to the water's edge.

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The Book of POETRY

THE POET OF THE HABITANT

WE have told you something of the habitant in another part of our book (p. 5301). Dr. William Henry Drummond (1854-1907) in his poems caught the spirit of these simple, unlettered but shrewd people and gave it to us without the suspicion of ridicule. Usually they speak French, and the result of their attempts to speak English is often amusing. They pronounce many English words according to French rules, and frequently interject French words and phrases. In the poem below Dr. Drummond makes an old man speak of the days that are gone, and of the friends that he once knew. Bord-A Loup was once a busy lumber camp, and in summer the Riviere des Prairies was hidden by logs and timber rafts. His poems are amusing, but through many runs a vein of sadness.

OLE TAM ON BORD-A PLOUFFE*

I Lak on summerev'ning,
w'en nice cool win'
is blowin'
An' up above ma head,
I hear de pigeon on de roof,
To bring ma chair an' sit dere, an'
watch de current flowin'
Of ole Riviere des Prairies as she pass
de Bord-a Plouffe.

But it seem dead place for sure now, on
shore down by de lan'in'—
No more de voyageurs is sing lak dey was
sing alway—
De tree dey're commence growin' w're
shaintee once is stan'in,
An' no one scare de swallow w'en she fly
across de bay.

I don't lak see de reever she's never doin'
not'in'
But passin' empty ev'ry day on Bout de
l'île below—
Ma ole shaloup dat's lyin' wit' all its timber
rottin'
An' tam so change on Bord-a Plouffe since
forty year ago!

De ice dat freeze on winter, might jus' as
well be stay dere,
For w'en de spring she's comin' de only
t'ing I see
Is two, t'ree piquique feller, hees girl was
row away dere,
Don't got no use for water now, on Riviere
des Prairies.

'Twas diff'rent on den summer you couldn't
see de reever,
Wit' saw-log an' squar' timber raf', mos'
all de season t'roo—
Two honder man an' more too—all busy lak
de beaver,
An' me! I'm wan de pilot for ronne 'em
down de "Soo."

Don't 'member lak I use to, for now I'm
gettin' ole, me—
But still I can't forget Bill Wade, an'
Guillaume Lagassé,
Joe Monferrand, Bazile Montour—wit'
plaintee I can't tole, me,
An' king of all de Bord-a Plouffe, M'sieu'
Venance Lemay.

CONTINUED FROM 5269



Lak small boy on hees
lesson, I learn de way
to han'le
Mos' beeges' raf' is
never float upon de Ottawaw,
Ma fader show me dat too, for well he
know de channel,
From Dutchman Rapide up above
to Bout de l'île en bas.

He's smart man too, ma fader, only t'ing he
got de bow-leg
Ridin' log w'en leetle feller, mebbe dat's
de reason w'y,
All de sam', if he's in hurry, den Bagosh!
he's got heem no leg
But wing an' fadder lak oiseau, was fly
upon de sky!

O dat was tam we're happy, an' man dey're
always singin',
For if it's hard work on de raf', w'y dere's
your monee sure!
An' ev'ry summer evenin', ole Bord-a
Plouffe she's ringin'
Wit' "En Roulant ma Boulé" an' "J'ai-
merai toujours."

Dere dey're comin' on de wagon! fine
young feller ev'ry wan too,
Dress im up de ole tam fashion, dat I lak
for see encore,
Yellin' hooraw! t'roo de village, all de
horse upon de ronne too,
Ah poor Bord-a Plouffe! she never have
dem tam again no more!

Very often w'en I'm sleepin', I was feel as if
I'm goin'
Down de ole Riviere des Prairies on de raf'
de sam as den—
An' ma dream is only lef' me, w'en de rooster
commence crowin'
But it can't do me no harm, 'cos it mak
me young again.

An' upon de morning early, w'en de reever
fog is clearin'
An' sun is makin' up hees min' for drive
away de dew,
W'en young bird want hees breakfas', I wak'
an' t'ink I'm hearin'
Somebody shout "Hooraw, Bateese, de
raf' she's wait for you."

* From "The Habitant," copyright, 1897, by G. P. Putnam's Sons. By special permission.

Dat's voice of Guillaume Lagassé was call me
on de morning
Jus' outside on de winder w'ere you look
across de bay,
But he's drown upon de Longue "Soo," wit'
never word of warning
An' green grass cover over poor Guillaume
Lagassé.

I s'pose dat's meanin' somet'ing—mebbe I'm
not long for stay here,
Seein' all dem strange t'ings happen—dead
frien' comin' roun' me so—
But I'm sure I die more happy, if I got jus'
wan more day here,
Lak we have upon de ole tam Bord-a Plouffe
of long ago!

THE HILLS OF SKYE *

This poem by William McLennan, the celebrated translator of French *Chansons*, is full of the yearning of the heart for home, wherever it may be. If our home was on the wide prairies we long for their boundless space again, "So and no otherwise, so and no otherwise Hillmen desire their hills."

THERE'S a ship lies off Dunvegan
An' she longs to spread her wings,
An' through a' the day she beckons
An' through a' the night she sings:—
"Come awa', awa', my darling,
Come awa' wi' me and fly
To a land that's fairer, kinder
Than the moors and hills o' Skye."

O my heart! my weary heart!
There's ne'er a day goes by
But it turns hame to Dunvegan
By the storm-beat hills o' Skye.

I hae wandered miles fu' many,
I hae marked fu' many a change,
I hae won me gear in plenty
In this land sae fair but strange:
Yet at times a spell is on me,
I'm a boy once more to rin
On the hills aboon Dunvegan,
An' the kind sea shuts me in.

O my heart! my weary heart!
There's ne'er a day goes by
But it turns hame to Dunvegan
By the storm-beat hills o' Skye.

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PRAIRIE GREYHOUNDS *

This beautiful rhythmical poem is by E. Pauline Johnson, several of whose most famous poems are included elsewhere in our book. All of her work is musical and pleasing.

WEST-BOUND

I SWING to the sunset land,
The world of prairie, the world of plain,
The world of promise and hope and gain,
The world of gold and the world of grain,
And the world of the willing hand.

I carry the brave and bold:
The one who works for the nation's bread.
The one whose past is a thing that's dead,
The one who battles and beats ahead,
And the one who goes for gold.

* By permission of L. A. Makovski, Executor.

I swing to the land to be;
I am the power that laid its floors,
I am the guide to its western shores,
I am the key to its golden doors,
That open alone to me.

EAST-BOUND

I swing to the land of morn,
The gray old East, with its gray old seas;
The land of leisure, the land of ease,
The land of flowers and fruits and trees,
And the place where we were born.

WORK

The Canadian poet, E. B. Brownlow, in this strong poem emphasizes the great joy and value of work done for unselfish ends and purposes. Work in the present, by the light of the past, will surely bring its own reward in the future.

WORK! use all thy will, give all thy might,
Ply all thy strength,
Until the golden dawn of early light
Shall change at length
Into deep purple shades, soft, pure and bright,
That bring glad tidings of the peaceful night.

Work! while the subtle seasons onward roll
In certain course,
The ways of this frail world to help control;
That keen remorse
In life's last moment—ere thy deeds unroll—
May strike no sudden anguish to thy soul.

Work! taking lessons from the mighty Past,
What men have done;
Yet let not those old masters hold thee fast;
They have begun
What later souls must finish. They have cast
The first stones at earth's evil—not the last.

Work! but seek not false Ambition's flame
To light thee on;
Not so the men of wisdom ever came
In days long gone;
No sordid dream,—no bare desire for Fame
Has left on Memory's lips one worthy name.

Work! in the hope of sowing seedlings great;
Let others reap,—
That, when stern Nature bids thy step abate,
Thy body sleep,
Thy soul shall tremble not at Death's dark gate,
But calm and sure shall meet its After-Fate.

A GAELIC LULLABY

HUSH! the waves are rolling in,
White with foam, white with foam;
Father toils amid the din;
But baby sleeps at home.

Hush! the winds roar hoarse and deep—
On they come, on they come;
Brother seeks the wandering sheep;
But baby sleeps at home.

Hush! the rain sweeps o'er the knowes,
Where they roam, where they roam;
Sister goes to seek the cows;
But baby sleeps at home.

OFF RIVIERE DU LOUP *

This poem by Duncan Campbell Scott, the Superintendent of Indian Education for Canada, and also an author of distinction, is a perfectly painted word-picture. Notice the remarkable skill with which he uses color, and light and shade.

O SHIP incoming from the sea
With all your cloudy tower of sail,
Dashing the water to the lee,
And leaning grandly to the gale ;

The sunset pageant in the west
Has filled your canvas curves with rose,
And jewelled every toppling crest
That crashes into silver snows !

You know the joy of coming home,
After long leagues to France or Spain ;
You feel the clear Canadian foam
And the gulf water heave again.

Between these sombre purple hills
That cool the sunset's molten bars,
You will go on as the wind wills,
Beneath the river's roof of stars.

You will toss onward toward the lights
That spangle o'er the lonely pier,
By hamlets glimmering on the heights,
By level islands black and clear.

You will go on beyond the tide,
Through brimming plains of olive sedge,
Through paler shallows light and wide,
The rapids piled along the ledge.

At evening off some reedy bay
You will swing slowly on your chain,
And catch the scent of dewy hay,
Soft blowing from the pleasant plain.

A ROYAL RACE

The well-known Canadian poet, James McCarroll, sings in praise of homely toil and the simple life, which bring their own reward.

AMONG the fine old kings that reign
Upon a simple, wooden throne,
There's one with but a small domain,
But, mark you, it is all his own.

And though upon his rustic towers
No ancient standard waves its wing,
Thick, leafy banners, flushed with flowers
From all the fragrant casements swing.

And here, in royal homespun, bow
His nut-brown court, at night and morn,
The bronzed Field Marshal of the Plough,
The Chancellor of the Wheat and Corn.

The Keeper of the Golden Stacks,
The Mistress of the Milking Pail,
The bold Knights of the Ringing Axe,
The Heralds of the Sounding Flail.

The Ladies of the New Mown Hay,
The Master of the Spade and Hoe,
The Minstrels of the Glorious Lay
That all the Sons of Freedom know.

And thus, while on the seasons roll,
He wins from the inspiring sod
The brawny arm and noble soul
That serve his country and his God.

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THE RIVER *

The "little river" is a favorite subject for poets, and the Canadian poet, Frederick George Scott, has expressed its charm and beauty in these lines. He insists that its greatest happiness and beauty will be before it reaches the sea.

WHY hurry, little river,
Why hurry to the sea ?
There is nothing there to do
But to sink into the blue
And all forgotten be.
There is nothing on that shore
But the tides for evermore,
And the faint and far-off line
Where the winds across the brine
For ever, ever roam
And never find a home.

Why hurry, little river,
From the mountains and the mead,
Where the graceful elms are sleeping
And the quiet cattle feed ?
The loving shadows cool
The deep and restful pool ;
And every tribute stream
Brings its own sweet woodland dream
Of the mighty woods that sleep
Where the sighs of earth are deep,
And the silent skies look down
On the savage mountain's frown.

Oh, linger, little river,
Your banks are all so fair,
Each morning is a hymn of praise,
Each evening is a prayer.
All day the sunbeams glitter
On your shallows and your bars,
And at night the dear God stills you
With the music of the stars.

THE ARCTIC INDIAN'S FAITH

In this poem, Thomas D'Arcy McGee has shown us the identity of the faith of the Indian and the faith of the white man.

WE worship the spirit that walks unseen
Through our land of ice and snow :
We know not his face, we know not his place,
But his presence and power we know.

Does the buffalo need the pale-face's word
To find his pathway far ?
What guide has he to the hidden ford,
Or where the green pastures are ?

Who teacheth the moose that the hunter's gun
Is peering out of the shade ?
Who teacheth the doe and the fawn to run
In the track the moose has made ?

Him do we follow, Him do we fear—
Spirit of earth and sky ;
Who hears with the Wapiti's eager ear
His poor red children's cry ;

Whose whisper we note in every breeze
That stirs the birch canoe ;
Who hangs the reindeer moss on the trees
For the food of the caribou.

That spirit we worship who walks, unseen,
Through our land of ice and snow :
We know not his face, we know not his place,
But his presence and power we know.

* By permission of the author.

THE PLAINS OF ABRAHAM

The author of this poem, Charles Sangster, imagines himself standing on the Plains of Abraham and watching enacted that fearful and memorable combat which ended in the fall of Quebec, with the loss of Canada to the French, and the death of the famous British and French generals, Wolfe and Montcalm. He contrasts the glory of war with the splendor of peace, comparing one to discord and the other to harmony.

I STOOD upon the plain
That had trembled when the slain
Hurled their proud defiant curses at the battle-
heated foe ;
When the steed dashed right and left
Through the bloody gaps he cleft,
When the bridle-rein was broken and the rider
was laid low.

What busy feet had trod
Upon the very sod
Where I marshalled the battalions of my fancy
to my aid !
And I saw the combat dire,
Heard the quick incessant fire,
And the cannons' echoes startling the reverber-
ating glade.

I heard the chorus dire,
That jarred along the lyre
On which the hymn of battle rung, like surgings
of the wave,
When the storm at blackest night
Wakes the ocean in affright,
As it shouts its mighty pibroch o'er some ship-
wrecked vessel's grave.

I saw the broad claymore
Flash from its scabbard, o'er
The ranks that quailed and shuddered at the
close and fierce attack ;
When victory gave the word
Auld Scotia drew the sword,
And with arms that never faltered drove the
brave defenders back.

I saw two great chiefs die,
Their last breaths like the sigh
Of the zephyr-sprite that wantons on the rosy
lips of morn ;
No enemy-poisoned darts,
No rancor in their hearts,
To unfit them for their triumph over death's
impending scorn.

And, as I thought and gazed,
My soul exultant praised
The power to whom each mighty act and
victory are due,
For the saint-like peace that smiled
Like a heaven-gifted child,
And for the air of quietude that steeped the
distant view.

Oh, rare divinest life,
Of peace compared with strife !
Yours is the truest splendor and the most en-
during fame,
All the glory ever reaped
Where the fiends of battle leaped
Is harsh discord to the music of your under-
toned acclaim.

THE COLORS OF THE FLAG *

Every Canadian boy would do well to memorize this poem by Frederick George Scott. It voices the high patriotism, and true courage, which the Canadian troops have shown in many glorious episodes in the Great European War.

WHAT is the blue on our flag, boys ?
The waves of the boundless sea,
Where our vessels ride in their tameless pride,
And the feet of the winds are free ;
From the sun and smiles of the coral isles
To the ice of the South and North,
With dauntless tread through tempests dread
The guardian ships go forth.

What is the white on our flag, boys ?
The honor of our land,
Which burns in our sight like a beacon light,
And stands while the hills shall stand ;
Yea, dearer than fame is our land's great name,
And we fight, wherever we be,
For the mothers and wives that pray for the
lives
Of the brave hearts over the sea.

What is the red on our flag, boys ?
The blood of our heroes slain
On the burning sands in the wild waste lands
And the froth of the purple main.
And it cries to God from the crimsoned sod,
And the crest of the waves outrolled,
That He send us men to fight again
As our fathers fought of old.

We'll stand by the dear old flag, boys,
Whatever be said or done,
Though the shots come fast, as we face the
blast,
And the foe be ten to one ;—
Though our only reward be the thrust of a
sword
And a bullet in heart or brain,
What matters one gone, if the flag float on
And Britain be lord of the main !

THE CANADIAN SONG-SPARROW *

The Canadian poet and statesman, Sir James Edgar, is the author of this pleasing little poem, which gives in simple language another version of the sparrow's song.

FROM the leafy maple ridges,
From the thickets of the cedar,
From the alders by the river,
From the bending willow branches,
From the hollows and the hillsides,
Through the lone Canadian forest
Comes the melancholy music,
Of repeated, never changing,
" All-is-vanity-vanity-vanity."

Where the farmer ploughs his furrow,
Sowing seed with hope of harvest,
In the orchard white with blossom,
In the early field of clover
Comes the little brown-clad singer
Flitting in and out of bushes,
Hiding well behind the fences,
Piping forth his song of sadness—
" Poor-hu-manity-manity-manity."

* By permission of the author.

A HYMN OF EMPIRE *

Somewhat in the spirit of Kipling's great "Recessional" is this Hymn of Empire by Frederick George Scott. Where the former poem speaks the word of caution, the author in this poem voices the desire and need for the expansion of empire.

LORD, by whose might the Heavens stand,
The Source from whence they came,
Who holdest nations in Thy hand,
And call'st the stars by name,
Thine ageless forces do not cease
To mold us as of yore—
The chiseling of the arts of peace,
The anvil-strokes of war.

Then bind our realms in brotherhood,
Firm laws and equal rights,
Let each uphold the Empire's good
In freedom that unites;
And make that speech whose thunders roll
Down the broad stream of time,
The harbinger from pole to pole
Of love and peace sublime.

Lord, turn the hearts of cowards who prate,
Afraid to dare or spend,
The doctrine of a narrower State
More easy to defend;
Not this the Watchword of our sires
Who breathed with ocean's breath,
Not this our spirit's ancient fires
Which nought could quench but death.

Strong are we? Make us stronger yet;
Great? Make us greater far.
Our feet antarctic oceans fret,
Our crown the polar star;
Round Earth's wild coasts our batteries speak,
Our highway is the main;
We stand as guardian of the weak,
We burst the oppressor's chain.

Great God, uphold us in our task,
Keep pure and clean our rule,
Silence the honeyed words which mask
The wisdom of the fool.
The pillars of the world are Thine;
Pour down Thy bounteous grace,
And make illustrious and divine
The sceptre of our race.

* By permission of the author.

DE BELL OF ST. MICHEL *

William Henry Drummond, the "Poet of the Habitant," is the author of this charming and tender poem. His familiarity and sympathy with the life of the French-Canadians has made him their interpreter to English-speaking people.

GO 'way, go 'way, don't ring no more, ole bell
of Saint Michel,
For if you do, I can't stay here, you know dat
very well.
No matter how I close ma ear, I can't shut out
de soun',
It rise so high 'bove all de noise of dis beeg
Yankee town.

An' w'en it ring, I t'ink I feel de cool, cool
summer breeze
Dat's blow across Lac Peezagonk, an' play
among de trees.
Dey're makin' hay, I know mise'f, can smell
de pleasant smell.
O! how I wish I could be dere to-day on Saint
Michel!

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It's fonnny t'ing for me, I'm sure, dat's travel
ev'ryw're,
How moche I t'ink of long ago w'en I be leevin'
dere;
I can't 'splain dat at all, at all, mebbe it's
naturel,
But I can't help it w'en I hear de bell of Saint
Michel.

Dere's plaintee t'ing I don't forget, but I re-
member bes'
De spot I fin' wan day on June de small san'-
piper's nes'
An' dat hole on de reever w'ere I ketch de beeg,
beeg trout,
Was very nearly pull me in before I pull heem
out.

An' leetle Elodie Leclair, I wonder if she still
Leev jus' sam' place she use to leev on 'noder
side de hill,
But s'pose she marry Joe Barbeau, dat's alway
hangin's roun'
Since I am lef' ole Saint Michel for work on
Yankee town.

Aht dere she go, ding dong, ding dong, it's
back, encore again
An' ole chanson come on ma head of "a la
claire fontaine,"
I'm not surprise it soun' so sweet, more sweeter
I can tell,
For wit' de song also I hear de bell of Saint
Michel.

It's very strange about dat bell go ding dong
all de w'ile,
For when I'm small garcon at school, can't hear
it half a mile;
But seems more farder I get off from Church of
Saint Michel,
De more I see de ole village an' louder soun' de
bell.

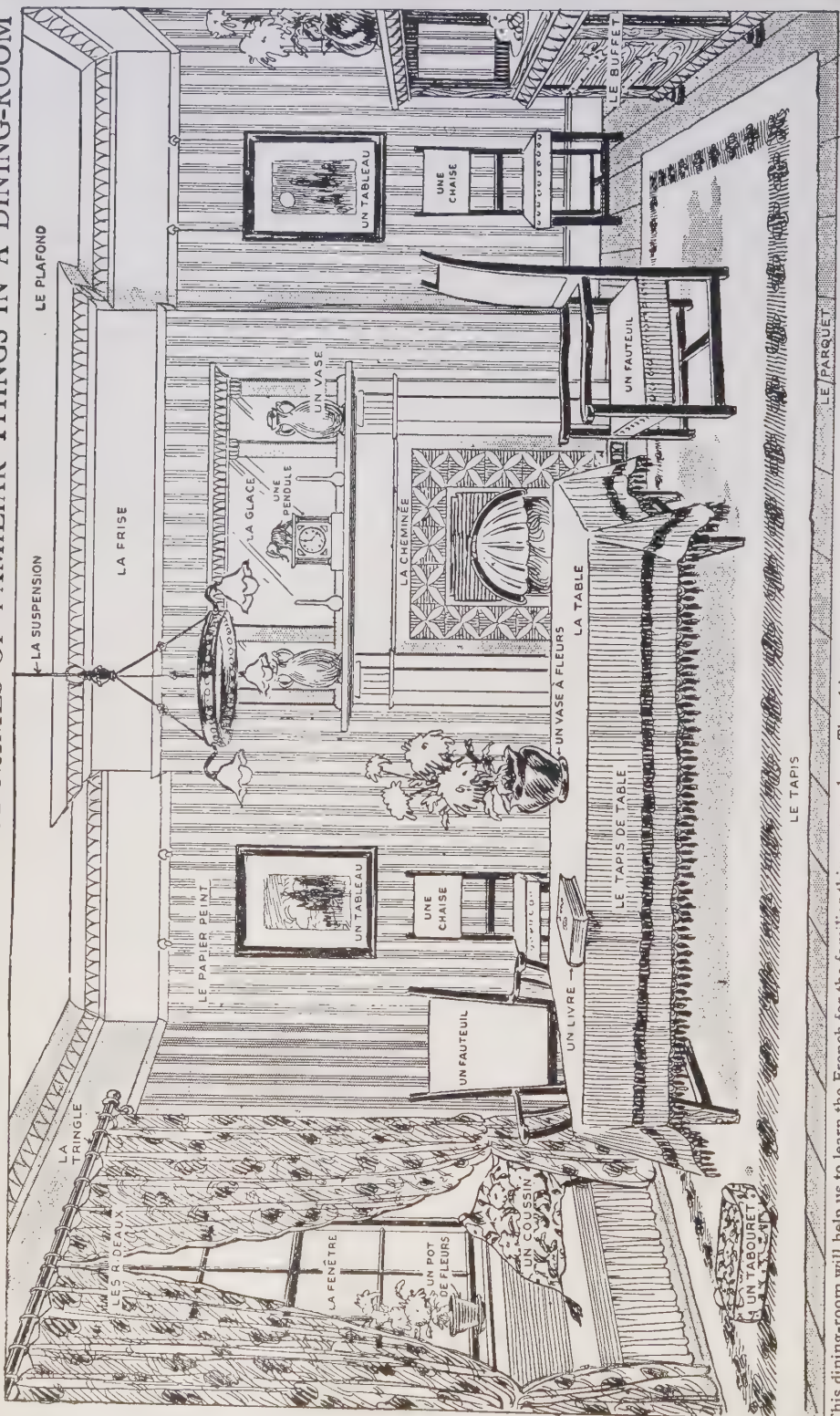
O! all de monee dat I mak' w'en I be travel
roun'
Can't kip me long away from home on dis beeg
Yankee town.
I t'ink I'll settle down again on Parish Saint
Michel,
An' leev an' die more satisfy so long I hear dat
bell.

HIAWATHA'S BROTHERS

The beloved American poet, Henry Wadsworth Longfellow, is the author of "The Song of Hiawatha," of which the selection given below is an extract. Elsewhere in our book will be found other lines from this beautiful and well-known poem.

THEN the little Hiawatha
Learned of every bird its language,
Learned their names and all their secrets,
How they built their nests in summer,
Where they hid themselves in winter,
Talked with them whene'er he met them,
Called them "Hiawatha's Chickens"
Of all beasts he learned the language,
Learned their names and all their secrets,
How the beavers built their lodges,
Where the squirrels hid their acorns,
How the reindeer ran so swiftly,
Why the rabbit was so timid,
Talked with them whene'er he met them,
Called them "Hiawatha's Brothers."

A FRENCH LESSON IN PICTURE: THE NAMES OF FAMILIAR THINGS IN A DINING-ROOM



This dining-room will help us to learn the French for the familiar things around us. The objects named are the ceiling, electric-light pendant, frieze, wall-paper, curtain-rod, curtains, looking-glass, clock, vase, fireplace, picture, chair, armchair, window, flower-pot, cushion, table, table-cloth, book, flower-vase, sideboard, footstool, carpet, and flooring.



THE FLIGHT IN THE MOONLIGHT

THERE lived in Normandy nearly a thousand years ago a little boy named Richard, grandson of the famous Rollo, who came with the vikings of the North to conquer the fair land about the River Seine. Little Richard had a lonely childhood. His step-mother disliked him, and he rarely saw his father, William Longsword. But when the boy was eight years of age his father became very ill, and thinking he was about to die, he took Richard to Bayeux and made the barons swear loyalty to the little heir.

Soon after, the father was treacherously murdered, and for little Richard there began a long series of troubled days. King Louis of France was his enemy, and thought he could easily deprive so small a boy of his dukedom.

But there were loyal barons and chieftains who loved and stood by the little Richard; and when the boy was taken prisoner, they rescued him. But not long did he remain free, for Louis, under some pretence of kindness, again got possession of the boy, who was then eleven years old, and shut him up in a tower at Laon in charge of Osmond, a Norman noble.

Now, Osmond was clever, and he taught Richard all he knew during the lonely hours that they spent in

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the tower. Moreover, he loved his little charge, and it grieved him to see the boy growing pale and feeble for want of fresh air and exercise. Once, indeed, he dared King Louis' anger, and secretly took Richard out

for a gallop across the country. The good this did the boy made Osmond quite determined that he would find a way to escape with the boy, to whom he was now much attached.

It was a wet season, and the damp and confinement in the tower made Richard really ill, so ill that the king and all those about the court thought the boy's days were numbered. Osmond wished them to think Richard was really worse than he was, for he had made a plan of escape, and was waiting a favorable opportunity for carrying it out.

Before long the opportunity came. A great banquet was to be given in the castle, and preparations, watched by the boy prisoner from his window in the tower, went merrily forward. According to Osmond's instructions, when the officer paid his usual visit of inspection, Richard remained lying on his bed, able to answer questions apparently in only a feeble voice. When the officer had gone, Osmond told his little friend that he meant to escape with him that very night, but

when Richard eagerly asked "How?" he would not tell him, but only said:

"Eat up all your food; you will want all the strength you can get."

The day wore on, and as the hour of the banquet came, and the guests had entered through the gateway, the courtyard and the entrance and passages inside seemed quite deserted. Osmond opened the door of the room, looked down the winding stairway, and listened. Then, beckoning to Richard to follow him, they stole down the steps and across the courtyard, keeping in the shadows as much as possible.

Fortunately, Osmond knew his way to the barn even in complete darkness, and with the boy close at his heels he entered it, tore down a large truss of hay, snatched up a cord and bound the hay round the boy's body, so that no one would have dreamed there was a

small boy in the middle of it. Then very carefully he set the bundle against a wall and hoisted it on to his back.

"Be quiet. Don't make a sound," he whispered into the bundle.

Now came the dangerous part of the venture, for Osmond had to cross the courtyard in the moonlight to reach the stables.

When he arrived at the stables, he put his bundle down, saddled a horse, set little Richard free from the hay, and led the horse out through a side door. Then, keeping the boy up in front of him, he wrapped a big cloak round the two of them, and rode quietly through the streets of the town, and when the houses were left behind, galloped away with his charge, as we see in the picture on page 5393. Little Richard lived to rule his dukedom and win the love and approval of the subjects whom he governed.

THE BATTLE OF THE BEES

ALL in the summer sunshine hummed the bees, among the fern and heather of their lone lowlands, encircled by soft Flemish haze. Strange things had been happening in their domain of late. Silent and motionless stood the windmills on the distant dunes; no longer the chimes of the cathedral's bells, cracked but melodious, were wafted across the rolling plains. Instead came the trampling of galloping horses, the mutter of far-off guns, and, from above, the small throbbing of an aeroplane, waiting its hour to strike.

Little cared the bees for that, or any other sight or sound; they had their daily task to do, their laws to follow, and well each tiny worker knew the laws—to serve the queen, to tend the young; to work, not for oneself, but for the hive, and when need arose to use one's sole weapon unflinchingly, though the bee who stings dies.

Over the leagues of heather they droned, homing to the hives, that stood, a score or more, in the gay flower garden on the edge of the Campine, where tall lilies grew, and orange-trees bloomed in tubs before the beautiful porch of the quaint old Belgian farm.

But in that home, usually so peaceful and calm, all was dismay that day. From his gate, Cornelius Vorst, the bee-farmer, had seen a cloud of dust on the long, level road—some horsemen were

approaching, dressed in dull grey-green, and in great concern he shouted:

"Quick, sons and daughters all! The Uhlans are on us!"

Into the farmhouse ran man, woman, and child; doors were barricaded, big chests drawn across the low windows, leaving just a chink for guns to peep out, for stout old Cornelius meant to defend his home bravely to the last. One word in his son Dirck's ear, and the lad leaped out of the last window left open, hurled all the beehives down from their stands, then was dragged back just as the terrible riders swept in through the gate, and came trampling over the flower garden, calling on Cornelius to surrender.

Then up rose the bees in their fury, to avenge their ruined homes, their broods destroyed, and fight, little as they knew it, for the masters who cared for them, the baby in the cradle, the bright-eyed girls who tended the flowers they loved.

Fiercely the conflict raged. What cared the bees for pistol-shot or sabre-stroke? In hundreds and thousands they clung to the maddened horses; they swarmed round the Uhlans' heads, and crawled, and stung, and died.

After twenty minutes, Dirck put his head out of the window, and saw a cloud of dust retreating—the baffled Uhlans fleeing from the battlefield where the bees had fought them, and won.

THE NEXT GOLDEN DEEDS ARE ON PAGE 5625.

The Book of WONDER

WHAT THE WISE MAN SAYS

IN these answers the Wise Man tells us how we know that a horse's eyes do not magnify, how we can give our faces real beauty, and how the sand of the seashore was made. He tells us, too, how it is that, in spite of the large sums spent in the making of newspapers, any one of us can buy one for a cent. He also makes it clear to us why we never find two things exactly alike, how it is that we see ourselves in dreams, and why it is that we become excited when something happens to cause us great pleasure, and reminds us of the force which keeps the worlds of which our universe is made from colliding. We often wonder why the sky should seem to be bluer in some places than in others, and this the Wise Man tells us, and also explains why the rain that falls from grey skies sometimes comes in heavy drops, and at other times comes in the form of a fine heavy mist. These are questions that trouble many children, and as the Wise Man loves children, he has been at great pains to make his explanations as clear as possible.

DO A HORSE'S EYES MAGNIFY?

IT is sometimes said that the reason why a horse obeys a man who is smaller than itself is that the horse's eyes magnify, so that it gets an impression of size which causes it to obey. This is not an idea that anyone should really believe.

To begin with, if a horse's eyes magnified, everything would be magnified, and a man would still be small in proportion to, say, another horse. Again, like ourselves, a horse is not dependent merely upon its sight to know size; it knows by feeling and sound that a man is smaller than itself.

But, of course, a horse's eyes do not magnify at all, quite apart from the fact that the horse would not be deceived if they did. To magnify is to make a thing appear larger than it really is. An eye made like a magnifying glass might do this when looking at a very near object, and it is probable that there are eyes in certain tiny animals which are really "microscopic," as we say.

But no eye can possibly magnify anything seen at a distance, for even the telescope cannot do that. It can only make the image of anything seen less small than it would appear without the telescope. A horse's eyes see images of things thrown on the eye-curtain, just as our own eyes do, even of huge things like the sun. And the horse obeys us, as other things do, because we have more mind than he has, and mind is master.

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CAN WE MAKE OURSELVES BEAUTIFUL?

There are many kinds of beauty, some that last and some that wear away. We cannot do much for ourselves in the way of the beauty that does not last, for this depends on the chance of our birth and fortune. We can do something, however, by means of living healthy, sensible lives, not eating or drinking too much, taking enough time in fresh air, and keeping the skin clear and the muscles of the face firm by sensible exercise. All this is well worth doing for itself, as well as for its effect upon our appearance.

But there is a deeper kind of beauty which we can indeed make for ourselves if we are wise enough, and to which there will be no end. There is the beauty of a beautiful soul shining through the face like the light streaming through the windows of a house at night. By thinking kind thoughts, by keeping in good temper, by persevering firmly in our purposes, we can make our faces a history and register of what our lives have been. All states of feeling affect the expression of the face, and in time the kinds of feeling that we have oftenest had make lines that stay upon our faces, so that children will run to us or run away from us. And thus we see that we are able to make ourselves beautiful or ugly in the only way that really matters.

WHY DID THE SAND GET ON THE SEASHORE?

The sand found on the seashore or anywhere else is made of one of the commonest elements in the world, the name of which is silicon. In the part of the world that is not actually alive, silicon corresponds to carbon in the living world. They are very similar elements, and they both combine with oxygen to form compounds called oxides. In the case of carbon this is carbon dioxide, but in the case of silicon it is the sand of the seashore, which is also found in many other forms.

Agas ago, when the earth was hotter than it is now, its crust was formed by certain things turning solid, and one important fact of that time was that the element silicon was burned up with oxygen, of which there was enough and to spare. The common name for the compound of silicon and oxygen is silica. The making of silica by the burning up of silicon was the first step toward the sand of the seashore.

Now, a great portion of this silica, made up of very tiny grains, became glued together by means of other softer substances, so as to form the sort of rock called sandstone. And when this rock is exposed to water and wind, they break down the sandstone into the grains of sand of various size that we find on the seashore. It is really all burned silicon. And even a small depth of it, a few feet, contains as much oxygen as is to be found in all the air above it. Some sand comes from the breaking down of other rocks.

HOW CAN A NEWSPAPER BE MADE FOR A CENT?

If only a single copy of a newspaper were to be made, it would cost hundreds of thousands of dollars. If everything required had to be made for the purpose, it would cost many millions of dollars in railways, and cables, and ships, and telegraphs, and telephones, and mines for the iron to make the printing presses, and countless other things. It is only because all these things exist already, and serve many other purposes as well, that it is possible to have a newspaper at any price at all.

But even granting that all these things exist, and even realizing that a mere newspaper is really a product and an expression of *all* the greatest facts of

civilization, it would still be impossible to produce a single copy of a newspaper for one cent. That would not go far to pay for the printing of it, and to pay all those who write the articles and send the news which, sometimes, they have gathered in far-off countries, sometimes at the risk of their lives.

But if a million people or even a few hundred thousands all want the newspaper, then all their cents together will make it possible to get it. To print one copy of the newspaper may cost hundreds or millions of dollars, according as we reckon all the things it depends upon; but to print two copies will cost *less than one cent* more than to print one, and there is the secret. Merely to strike off copies costs much less than we give for them, and so, if enough of us ask for a thing, we can, by clubbing together, get for one cent what none of us, alone, could afford to pay for if he devoted his life to saving up for it.

ARE THERE ANY TWO THINGS EXACTLY ALIKE IN THE WORLD?

This is a question which has often been asked by wise men and which we can perhaps answer at last. If we want to find things that are exactly alike, we must go to what is very simple. We shall never find two religions exactly alike, or two men, or even two animals or plants. Probably even the very simplest living things are far too complicated in reality for any two to be exactly alike. We must pass away from the world of life if we wish to find complete likeness.

But we have more chance of finding what we seek in the not-living world, what we call the inorganic world. Two crystals of any particular substance may be quite alike so far as any of our means of judging can tell us. If we could measure finely enough, we should probably find small differences. Far more alike must be the atoms of any particular element, though we have learned from the study of radium that atoms, even of a given element, may be young or old, and differ accordingly.

We only find perfect likeness, so far as we know, when we come down to the electrons, or "negative corpuscles," that make up all atoms of all kinds. These seem to be all exactly alike in all respects at all times, no matter from what kind of atom they have come.

WHY ARE LONDON POLICEMEN SOMETIMES CALLED "BOBBIES" ?

This is a name for the London police force which amuses travelers, but really brings us back to the Book of all Countries.

The police force was started early in the nineteenth century, by a famous statesman called Sir Robert Peel. Since his time policemen have often been described by names recalling their founder. The best known of these is "bobby," which plainly suggests Robert, and, indeed, sometimes people are heard speaking of a policeman as "Robert." Also, not many years ago, it was still quite common to hear the Irish police force called "peelers," for the same reason.

DO CATS AND DOGS EVER CRY ?

Cats and dogs may be terribly unhappy—far more than unhappy enough to make them cry if they were human. Yet we know that neither cats nor dogs ever do anything which can fairly be called crying. Of course, they have tear-glands, as we have, because the front of their eyeballs requires washing and moistening, just as our eyeballs do ; and it may be that their tear-glands produce tears more quickly at one time than at another. But it cannot be said that cats and dogs ever cry.

It would be interesting to study the kinds of animals that come nearest to mankind, and see whether crying is to be found among them. The animals nearest to us are monkeys ; and among these there are four kinds, called apes, which are much nearer to us than the others. There is no question at all that they laugh and grin. But no ape cries, and, indeed, we are the only creatures who cry. Why this is so, no one can say.

WHAT DO THE COLORS OF THE FLAG MEAN ?

The red in the flag stands for the blood of the heroes which they have shed for the nation. It is the color of strength, and stands for the life of a nation that is strong to do right. White is for purity, and purity in a nation means purity of purpose, honesty, and truth. Blue, the color of the skies, stands for loyalty. We say of a loyal friend that he is "true blue." Loyalty in a nation means just the same thing as loyalty in

a boy or girl. It means that a loyal nation, at whatever cost, must be true to its principles, true to its word, and faithful to its friends. You see the flag that floats so bravely in the breeze means a great deal to each of us. It is the symbol of the nation to which we are so proud to belong ; its colors are our colors, and it is our united strength and purity and loyalty that provides the power which makes the great heart of the nation throb.

DO WE SEE OURSELVES IN DREAMS ?

There is no reason why we should not see ourselves in dreams, and certainly many people do see themselves. The greater number of dreams are visual—that is to say, they have to do with vision, or seeing. We do not so much *hear* things said as *see* people doing certain deeds. That is because in most brains the vision part is most important, and has been most excited during the day.

We shall be more likely to see ourselves in our dreams when our attention during the day has been very much directed to ourselves. If something has happened to us, and we have been much looked at ; if we have been singing or acting or speaking or reading ; and if we have been thinking how we looked when everyone was looking at us ; or if we have been looking at ourselves in a glass, or even looking at photographs of ourselves—in all such cases as these we shall be very liable to see ourselves in our dreams.

WHY DO WE BECOME EXCITED WHEN WE ARE PLEASED ?

Pleasure is a state of feeling or emotion. These states of feeling may all be classified in two groups, on the pleasure side or on the pain side. All the states of feeling and emotion that lie below the neutral line, and belong to the more or less painful class, act by depressing us ; they reduce our activity. A man stricken by terrible grief may remain huddled up and motionless for hours. Pain and painful feelings lower the tide of life.

On the other hand, the pleasurable feelings stimulate ; they raise the tide of life. Just as the others lessen activity, so these increase activity. The happy man wants to jump, and dance, and shout, and throw his hat in the air. Children show all these facts more

clearly than grown-up people, simply because grown-up people hold themselves in check. But what happens is really the same in both cases.

WHY IS LONDON CALLED LONDON?

Many names of things and places were given long ago, before history began to be written. Therefore we cannot be sure how the names came to be applied to some places. London is one of such names. Its beginnings take us back to the time when the inhabitants of Great Britain were wild and uncivilized. In those days the River Thames was much wider than it is now.

The river made a sort of lake, or lagoon, up which the tide came from the sea. The rude barbarians built a fort, which they called "the fort on the lagoon," using a Celtic word—Cair Lundun—to express that meaning. The Romans, when they came to Great Britain, adopted the word, which they changed a little, so as to fit into the Roman language, just as we often change the names of French and German towns by giving them English pronunciation, or Anglicizing them as we say. The name of London in the Latin tongue was Londinium. As the Romans made it into an important town it kept its name after their departure, and changes in language have modified the word into London. Thus the history of a place may often be revealed by its name.

WHY DO THE WORLDS NOT COLLIDE AS THEY GO ROUND?

It is true that, so far as we can see at first, the worlds do not collide. We have no record of any collision in the solar system since men began to watch it. We have learned that "the heavens are balanced" by the law of gravitation, acting together with the laws of motion. Yet we are certain that the solar system was not always as it is now, and that it is slowly changing, so that collisions are by no means impossible.

In all parts of the sky there are double stars, and these must all have been formed by collisions.

Another most important question, the answer to which probably gives the key to many facts, is the question as to what happens when a star rushes into a nebula. We are certain that this must happen again and again. Lately it has been thought that we have actually seen

evidence of new stars blazing out in the heavens after being formed by collisions.

WHY IS THE SKY IN ITALY SO BLUE?

The sky is blue because certain tiny things in the air catch the tiny waves that form the blue part of sunlight, and then throw the blue rays to our eyes. If they did not do this the sky itself would be dark.

We think of the sky in Italy as being blue because poets have sung of it so often. But it is really not any bluer than the sky in other places in the same latitude. In places that are nearer the equator the sky is still bluer because the sun's rays strike it more directly, and therefore more brightly. This means that there is a greater quantity of blue rays, as of all kinds of rays, coming through the air; and the reason why the air is bluer is because the particles of it have more blue rays to catch and reflect to our eyes. We must always remember that when we speak of the sky being blue it is really the air that is blue; and the color that seems to come from so far away is reflected from only a few miles away. One reason why we think of the sky of Italy as bluer than ours is that Italian cities do not send so much dirty smoke into the air as many of ours do.

WHY IS THE RAIN SOMETIMES HEAVY AND SOMETIMES FINE?

One condition must always be present before the water-vapor in the air can condense into the little liquid drops which, if they fall, we call rain. That condition is that there must be some solid nucleus, as it is called, for the water-vapor to condense upon, and it is quite possible that one of the reasons why raindrops differ in size is owing to the difference in size of the specks of solid matter—dirt or dust—round which they gather.

But we have lately learned that sometimes electricity may act on the gases of the air, and split up the molecules of those gases, and form tiny things which are able to act as specks for water-vapor to condense upon. The size of raindrops may also be affected by the level at which the rain was formed, and when a very sudden change of the temperature has caused them to form very quickly they may be quite a considerable size.

WHY IS BOSTON CALLED "THE HUB OF THE UNIVERSE?"

Oliver Wendell Holmes was himself a Bostonian, but in one of his books, he poked good-natured fun at those people who think that Boston is the most important city in the world. He said that the Bostonians thought that the dome of the State House was the centre of the earth, and that Boston must therefore be the hub. Laying joking aside, the Bostonians have good reason to be proud of their city. It has always been a leader in great movements. When it was only a tiny, weak town, Harvard, the oldest college in the United States, was founded there, and the schools of Boston have always been among the best in the country.

The town was early in planning resistance to Great Britain before the Revolutionary War. Many meetings were held at Faneuil Hall, a picture of which we show you elsewhere, and on Boston Common. Of course you have read "The Ride of Paul Revere," which you will find on page 573. The people of Boston remember the Boston Massacre, and they are proud of Bunker Hill, where it was proved that the colonists were as brave as any soldiers. Boston Common is still in the centre of the city and is still a meeting place.

The Old North and the Old South Churches, King's Chapel, Faneuil Hall, and the Old State House still remain to remind one of Revolutionary times. When we stand in one of them the past seems very close to us. Thousands visit them, and the old cemeteries in the heart of

the city, where are buried so many of the great men of former days. The Winthrops lie in King's Chapel Burying Ground, which was the first cemetery laid out, and in the Granary Burying Ground are the graves of Samuel Adams, James Otis, Paul Revere, and many others of whom you have read.

Boston is proud of her later history, too. During the Civil War the city was always strong for the Union and has many monuments of that stirring time. Some of the best statuary in the country is in Boston. The State House, on Beacon Hill, was designed by Charles Bulfinch, and its gilded dome can be seen from afar. The Boston Public Library is one of the most beautiful buildings of the kind in the United States, both inside and out, and many other public buildings make a fine impression. The Museum of Fine Arts has some fine pictures, and the collection of Japanese art is the largest in the world.

Many of the greatest writers of America have lived in Boston, and many important books have been written and printed there. Some of the greatest men in the world come to Boston to deliver lectures, and the city has now one of the best orchestras to be heard anywhere. There are many colleges and universities in and around the city. The Bostonians say that there are more people of intelligence in their city than in any other in America. The system of parks is wonderful, and the affairs of the city have been well managed. Do you wonder that the people of Boston are proud of their city?

THE NEXT QUESTIONS ARE ON PAGE 5513.



Bunker Hill Monument stands on Breed's Hill, where the battle was fought June 17, 1775. Here the untrained Americans resisted the British soldiers until their powder was gone. The monument is 221 feet high, and has a stairway to the top inside. It was begun in 1825 and dedicated in 1843. Daniel Webster spoke at both celebrations.

TWO IMPORTANT CANADIAN UNIVERSITIES



McGill University in Montreal was founded in 1811, by James McGill, a wealthy resident of Montreal. Since that time it has received large gifts, and has added many new departments until now it is one of the best equipped institutions in America. Many of the professors have a world-wide reputation, and no university outside the British Islands takes rank above McGill. The picture represents the oldest of all the buildings,—the home of the Faculty of Arts, originally a small foundation, but now on a level with the world-famous Schools of Medicine and Engineering.



The University of Toronto was chartered in 1827 as King's College, but was not opened for students until 1843. It received its present name in 1849. It has grown wonderfully since that time, and several other schools and colleges have been made a part of the University, which now has many departments. Its reputation has increased with its growth in numbers. The picture represents only one of many buildings. This building is much admired, and no one who visits the beautiful city of Toronto, "The Queen City of the Lakes," should fail to see it as well as the other colleges and halls.

WHAT THIS STORY TELLS US

THE schools of Canada, both higher and lower, are good, and are growing better. While they differ in excellence in different Provinces and in different districts in the same Province, more and more money is spent upon the free schools, and many great gifts have been made to the colleges and universities. In spite of the small population of Canada, some of her universities have a world-wide reputation. More and more attention is being given to the schools which deal with practical training in agriculture, mining and the like. The future of Canadian education seems bright.

SCHOOLS AND SCHOOLMEN IN CANADA

THE two great nations of North America believe in education, as all free countries must if they are to remain free. In both of them, institutions for both higher and elementary education were established when people were few and poor, and have grown with increasing population and wealth, until now some of the largest and best equipped institutions in the world are in North America.

No country has planned more liberally for public education than Canada. In some of the Provinces one-eighteenth of the public land has been set aside for educational purposes, and as population increases, the land not yet sold will grow more valuable. British Columbia has set apart 2,000,000 acres for her Provincial university. Then, besides, taxes are levied for the support of the schools in the districts.

In Canada, the Provinces have control of education, and each has established a system suited to its own needs, and so what is true of the way schools are managed in your Province, may not be true in another Province, though there is a general likeness except in Quebec. Two things are settled in all of them, however. Education is free in the lower grades, and the children must attend a certain length of time. While the attendance law is not always enforced, in some districts it is hardly needed.

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CONTINUED FROM 5302



Ontario has the largest number in school, and spends the largest amount for education, though it does not spend so much on every child as the western Provinces do. In some of the rural districts there are continuation schools, which provide two, or even three, years of high school work for children who live too far away from a high school, or collegiate institute, to attend it. Quebec has more schools and more teachers than any other Province, but does not spend so much money as Ontario. Prince Edward Island, with the smallest population, naturally has the fewest children in school.

Quebec, Ontario, Alberta and Saskatchewan have separate schools for Roman Catholics. The other Provinces have only one system of public schools, as in the United States, and parents who do not wish their children to attend them, must either support private schools or else send their children to schools supported by churches. Some of the church schools receive aid from the government if they meet certain requirements.

THE MEN WHO MANAGE THE PUBLIC SCHOOLS

In every Province, there is at least one officer in direct charge of the public schools, who is usually not changed when the government passes from one party to another. He is called Deputy Minister, Superintendent of Education, Superintendent of Public Instruc-

tion, or some such name, and has of course many assistants, who visit the schools, advise teachers and parents and the like. In Quebec, the man in charge of all the schools has two deputies, called secretaries, one for the Protestant schools, and the other for the Catholic schools. Some Provinces have a Minister of Education, who is a member of the Government, and changes with the change of party. In all the Provinces there is some sort of a board of education to direct, in a general way, those who manage the schools.

HIGH SCHOOLS AND COLLEGIATE INSTITUTES

Beyond the elementary schools are the high schools and collegiate institutes, supported wholly or in part by the public. Ontario has the best system of high schools, but other Provinces are gaining rapidly. In collegiate institutes, pupils sometimes can do some of the work required in college or university. Sometimes the higher schools are not entirely free, but small fees are charged.

Then, too, there are private schools and church schools which prepare for the universities. The different Provinces also support normal schools to prepare men and women for teaching. Some of these are first-class institutions in every respect. Some of the universities also have Departments of Education for the same purpose.

THE COLLEGES—WHAT THE WORD MEANS IN CANADA

In Canada, the word college is not used in quite the same sense as in the United States. There, a college means an institution to which boys or girls go after they have been graduated from high school, or a preparatory school, or which they may enter by passing the entrance examinations. After a college course of three or four years, they receive a degree if they have passed their examinations. Such a college may, or may not, be a part of a university. In Canada, some colleges give degrees, some are parts of a university, some are "affiliated" with a university which gives the degree when satisfied that the students are worthy. Some teach their students on certain subjects, while in others they attend classes in a university college. Still others do not give degrees, but only prepare students for the university. The best-known institution of

the last kind is Upper Canada College at Toronto, which has a wide reputation, and draws students from the United States. Bishop Ridley College, at St. Catherines, is another well-known school of this kind.

In some of the Provinces there are agricultural colleges which teach scientific farming, and technical colleges which train men for engineering, mining and the like. Some of the universities also include similar colleges, and there are schools of domestic science to teach the proper management of a household.

THE UNIVERSITIES OF CANADA

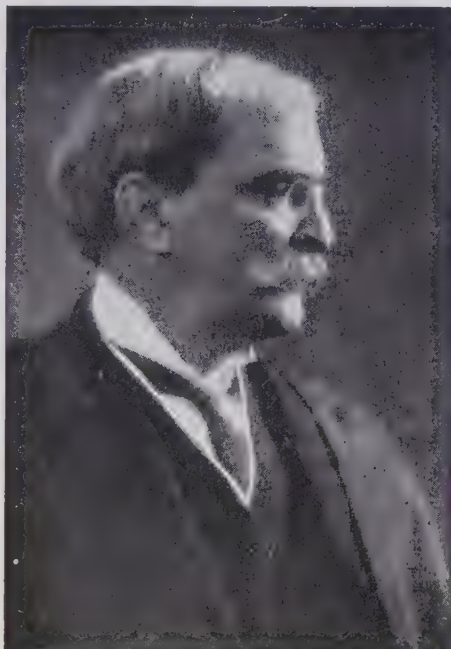
There are about twenty institutions with university powers in Canada, but not all of them are real universities. Some of them are too new to have developed all departments, or to have gained a wide reputation. Some of them are too poor to build the great laboratories necessary for advanced institutions in science, engineering and medicine, or to pay great scholars to join their faculties; for the fees which can be charged for university education, can never pay the cost of instruction. The remainder of the cost must be made up by the state, the church, or by gifts from private individuals. The wealthy men of Canada have made many large gifts to some of the universities.

Six of the Provinces have Provincial universities. These are New Brunswick, Ontario (the University of Toronto), Manitoba, Saskatchewan and Alberta; British Columbia is developing a great university. McGill University was founded by a private individual, and has been endowed by others. The other universities are more or less under the care of different churches.

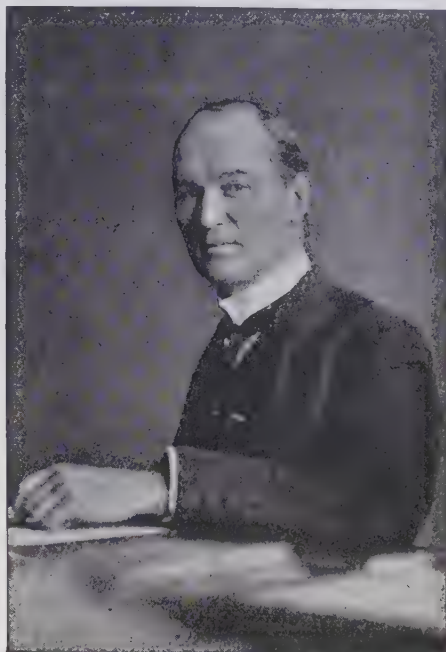
The best-known universities in Canada are Laval, the great Roman Catholic institution at Quebec, with a branch in Montreal; McGill, in Montreal, with its many schools and affiliated colleges; Queen's, at Kingston, founded by the Presbyterian Church, but now attended by many of other denominations, and the University of Toronto, the largest of them all. In all of them, as well as in some of the less-known institutions, are great scholars, some trained abroad, others in the United States, and still others products of Canadian institutions.

THE NEXT STORY OF CANADA IS ON PAGE 5543.

FOUR WELL KNOWN EDUCATORS



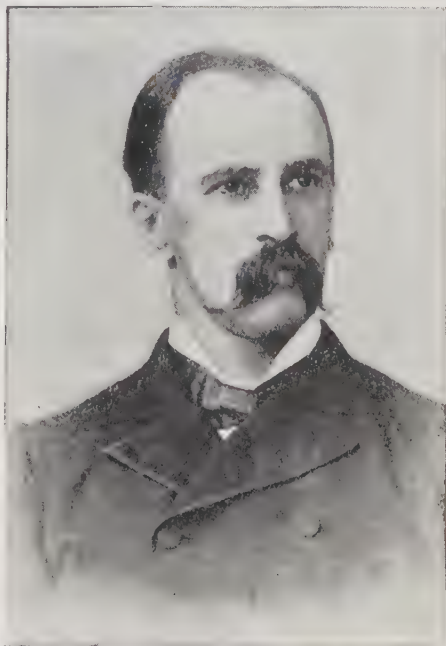
William Peterson, LL. D., Principal of McGill University since 1895, was educated at Edinburgh, Gottingen and Oxford, and before coming to Canada was Assistant Professor in the University of Edinburgh, and Principal of University College, Dundee. In 1915, he was made a knight.



Robert Alexander Falconer, D. D., LL. D., President of the University of Toronto since 1907, studied at Edinburgh, Leipzig, Berlin and Marburg, and served as Professor in and Principal of Pine Hill College, Halifax. He was born on Prince Edward Island, and has also received knighthood.



Very Rev. Daniel Miner Gordon, D. D., LL. D., Principal of Queen's University, Kingston, from 1902 to 1916, was previously Pastor of St. Andrew's Church, Halifax, and later Professor in Halifax Presbyterian College. He was born in Pictou.



Sir William Osler, a famous teacher of medicine, is here shown as a young professor at McGill University. He is a native Canadian, and was educated at Toronto, Montreal, London, Berlin and Vienna. He is now Professor at Oxford.

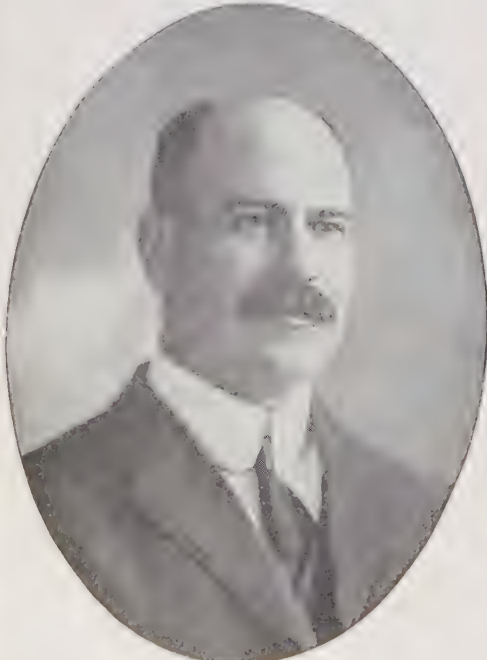
FOUR EDUCATIONAL LEADERS



Dr. George W. Parmelee, English Secretary (Deputy Minister) of the Department of Public Instruction for Quebec since 1891, was previously Professor of English Language and Literature in McGill Normal School, Montreal.



A. H. Mackay, LL. D., Superintendent of Education for Nova Scotia since 1891, was previously Principal of the Pictou Academy, and of the Halifax County Academy, and Lecturer in Biology in the University of Dalhousie.



Duncan Stewart MacKenzie, Deputy Minister of Education for Alberta from the organization of the Province in 1917, was previously Deputy Commissioner of Education for the Northwest Territories, of which Alberta was formerly a part.



Robert Fletcher, Deputy Minister of Education for Manitoba since 1903, had served as Mathematical Master in the Collegiate Institute at Portage la Prairie, and as Lecturer in Mathematics at St. John's College, Winnipeg.

TWO MORE CANADIAN INSTITUTIONS



Photograph by Kiscock, Montreal.

This view of the campus of Queen's University shows Ontario Hall (to the left), Fleming Hall, and John Carruthers Hall. All of them are used by the School of Mining, which is one of the strongest departments of the University. The Library and the Theological Buildings are very attractive structures.



Photograph by Pringle and Booth, Toronto.

Upper Canada College, in Toronto, occupies imposing buildings, on an attractive site, beyond the University. In it many boys have been well prepared for the universities, or have received training which has been of service in the duties of life. Its patronage comes from many directions.

WINTER SPORTS IN COLLEGE LIFE



Sports are a characteristic of college life, and many a man learns quickness of mind and eye in the playing fields and gymnasium. These men are out on a skiing expedition. Skiing was introduced from Norway, and quickly became a popular sport in Canada. A tramp on skis, through the snowy fields, in midwinter, sets the blood coursing rapidly through the veins and gives a feeling of joy in life that nothing can surpass.



This picture shows a group of students at a hockey game. The game of course is often played in a closed rink; but a game played on an outdoor rink, in the bracing air of a winter day, is much more healthful. Because of the long winters, Canadian hockey players become very skillful, and some of the college teams play very rapid games. The game requires the exercise of rapid thought and quick judgment.

TWO OF THE SMALLER COLLEGES



This is Victoria University, in Toronto, which has been federated with Toronto University. It is quite an old college, and was at one time in Cobourg, where the old buildings stood in wide grounds with fine old trees. Victoria is what is called a denominational university, and is upheld by funds given by members of the Methodist church. Many of the Methodist clergymen in Canada are graduates of Victoria.

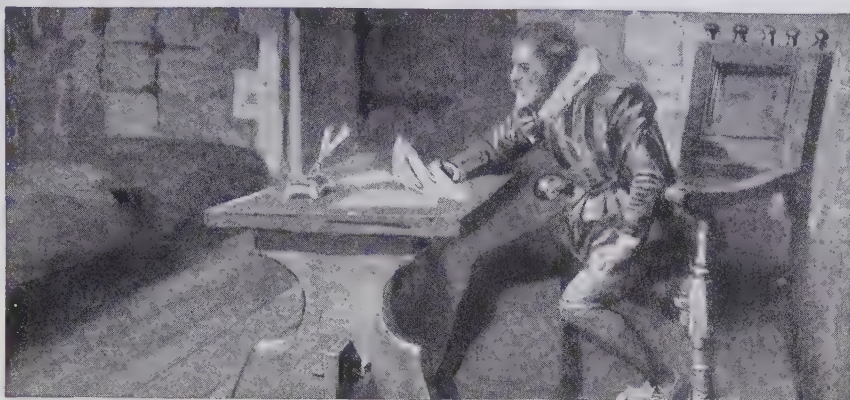


This fine old building is part of the University of New Brunswick in Fredericton. When this old building was first erected it was called King's College; but after it was made the provincial university the name was changed. It is one of the small universities that do good work, and to which men look back with affection in their later years. Charles G. D. Roberts and Bliss Carman were students of this university.

RALEIGH'S FIRST MEETING WITH QUEEN ELIZABETH



Sir Walter Raleigh was a man of quick decision and resource, and the story of his first encounter with Queen Elizabeth is typical of him. The queen had just come out of her palace, and seeing a puddle she hesitated about stepping into it. In a moment Raleigh laid his plush coat across the mud for Elizabeth to walk on.



SIR WALTER RALEIGH WRITING IN HIS DUNGEON AT THE TOWER

SIR WALTER RALEIGH THE FOUNDER OF THE BRITISH EMPIRE

WE should keep a warm place in our hearts for the memory of Sir Walter Raleigh, who tried to found a British Empire over the seas. It was in his great, far-seeing mind that there dawned the idea of carrying people from the British Isles to build up new Britains in strange and savage lands. He was a warrior, an explorer, a historian, and a poet. It is true that he was far from perfect. He lived in wild and lawless times, when it was deemed not dishonorable for English noblemen to send ships to sea to act as something very like pirates. If they succeeded, they were honored; failure was looked upon as a great crime.

Raleigh was born at Hayes, near Budleigh Salterton, Devonshire, in 1552. The little Walter was a born hero, and loved to haunt the beach at Budleigh, there to feast his mind on stories of strange lands and strange peoples across the wide waters, poured into his willing ears by bold sailors resting in the little town after the hardships of their voyages.

Born to an adventurous life, Raleigh had talent for scholarship also, and we find him, when only sixteen years of age, a student at Oxford University after he had done

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well at the schools round about his home. He stayed for a year at Oriel College, and then, at seventeen, he opened his career of daring. He went to France and fought in the Huguenot army, and saw several battles. He remained abroad five years, and it is thought he was there during the frightful massacre on St. Bartholomew's Eve, and witnessed horrors which possibly prompted him to denounce religion persecution, as he did in later years.

He never flinched from shedding blood when he thought that severe measures were necessary. A rebellion sprang up in Ireland, and he went there in search of adventures. He had by this time followed up his adventures in France by making a voyage with Sir Humphrey Gilbert, and by taking a part, it is believed, in the wars in the Low Countries. He was, therefore, a well-trained soldier when he went to Ireland in 1580 to help to put down a rebellion.

Some 600 Spaniards and Italians had landed in Ireland, and had encouraged the Irish to rebel against England. They had garrisoned a fort at Smerwick, and when they were conquered, Raleigh was ordered to punish them, and he executed

every one of them. That seems a terrible crime in our days, but it was deemed then quite the right thing to do.

During this campaign Raleigh became the friend of Edmund Spenser, the great poet, and afterwards succeeded in having him introduced at the English court. Meantime, however, Raleigh, though he had once or twice appeared at the court of Elizabeth, had not yet been recognized there. After the Irish adventure, however, he was sent to London with a report of the battle. There, the Earl of Leicester, who was at this time a favorite of Queen Elizabeth, befriended him and he was soon greatly favored by the queen.

HOW QUEEN ELIZABETH WALKED OVER THE RICH ROBE OF SIR WALTER RALEIGH

Queen Elizabeth was at this time nearly fifty years of age; Raleigh was not yet thirty. He was tall and handsome, with dark, luxuriant hair, and a complexion like that of a Spanish beauty. He was graceful and active, and a man of great physical power, known to be as brave as a lion; he was a charming poet, a man of much learning, and gifted with fiery eloquence. He had courtly manners, and was always well dressed in the rich fashion of the time.

What wonder, then, that he should win the heart of the vain though able queen? The story of their first meeting is well known, but we may recall it. The queen, on leaving her palace, had found a muddy puddle lying before her. Raleigh, who saw her distress, instantly stripped off the rich velvet cloak which he wore, and spread it before her so that she walked dry-shod over the mud. Very soon Raleigh became prime favorite of the queen, and she showed him many favors. She allowed him to levy taxes upon wines and woolen cloths; she made him warden of the royal mines in Cornwall and Lord Lieutenant of that county. She knighted him, and he was elected a member of Parliament. For five years Raleigh had no rival at court, and in this time he acquired great riches, and spent them as liberally as they came on the great ventures of the time.

THE FIRST MEMBERS OF THE HOUSEHOLD CALLED THE BRITISH EMPIRE

It was in 1584 that he fitted out at his own cost an expedition to explore the American coast north of Florida. The queen agreed to the plan, though she could not bear to let Raleigh himself go.

The sailors of his fleet had good fortune, and took possession for Raleigh of a great area of land which Queen Elizabeth, "the Virgin Queen," herself named Virginia. Next year Raleigh sent out a strong fleet with people who were to settle down in the new land, the first colonists ever sent out by England. They settled on Roanoke Island, now in North Carolina. Up to that time Great Britain did not own a foot of land beyond her own borders. Raleigh's scheme gave her the foundation of her Colonial Empire. The venture was not a success. Several ships were sent out. One hundred men remained for a year, and then were brought home. Next, fifteen men were left, but they disappeared. After that a party of 150 colonists, of whom twenty-five were women and children, was despatched. The governor left them on the island of Roanoke while he went back to England for supplies. It was four years before he could return, and then he found the island deserted. The whole party, including his little granddaughter, the first white child born of English parents in the country, had disappeared, and were never heard of again.

Raleigh then gave up the effort. It had cost him \$200,000 out of his own pocket, a sum equal to about a million dollars at the present day, and, so far as he was concerned, the scheme was a failure. But it gave the people of Great Britain a new idea. The importance of oversea possessions began to be realized, and there grew up the idea of a large fleet of ships, both for trade and for war, which has since made that country the greatest naval power the world has ever seen.

THE FIRST POTATOES GROWN IN IRELAND AND THE FIRST TOBACCO GROWN IN ENGLAND

A cloud now appeared upon the horizon of Raleigh. A new court favorite appeared in the person of the Earl of Essex, and Raleigh, who could not tolerate a rival in the favor of his sovereign, quitted the court and went to Ireland. His visit was important to Ireland. The queen had given him an estate there, and in his garden in the town of Youghal, of which he was for some time mayor, he planted the first potatoes ever grown in that country. These had been brought back, with some tobacco, by some of the men whom he had sent to the New World.

Potatoes have proved of immense importance to the whole of Europe, but to no other country are they more vital as food than to Ireland. Raleigh was the first man of rank to smoke tobacco in England, and the first tobacco ever grown there was in the garden of Lord Burghley, in the Strand.

The coming of the King of Spain's great Armada soon recalled Raleigh from Ireland. He had already taken steps for the defence of his county, but he was too late to take part in the battle. It is said that the flagship of the British fleet had

fitted out, largely at his own cost, another and larger fleet for the same purpose, and was allowed by the queen to go out with it to a certain point, to start it well on its way. When he returned to London, he was immediately cast into the Tower. The reason was that, while enjoying the favor of the queen, he had dared to fall in love with Elizabeth Throgmorton, one of the queen's maids of honor. The old queen, who had had so many lovers, could not endure such a thing in her favorite, and kept him a close prisoner for six months, treating the unfortunate



THE POET SPENSER READING HIS POEM, "THE FAERIE QUEENE," TO SIR WALTER RALEIGH

been built from designs that Raleigh had made. Gradually Raleigh recovered his lost position at court, and persuaded the queen to fit out a fleet to attack the Spaniards. She would not let *him* go, but his valiant cousin, Sir Richard Grenville, went, and his little ship, the *Revenge*, left to itself, fought a marvelous battle against the whole Spanish fleet.

Raleigh afterwards celebrated the feat in a magnificently written narrative, and 300 years afterwards his story formed the foundation upon which Tennyson based his poem, "The *Revenge*." Raleigh now

Elizabeth Throgmorton in the same way.

Raleigh's imprisonment was ended in a strange way. The fleet which he had sent out brought home a richly laden prize. So great was the disorder among the dishonest people of the port that Raleigh had to be released from prison to go down to Dartmouth to keep order while the affairs of the prize-ship were settled. For this he was given his liberty and \$180,000, only \$10,000 more than he had spent on the expedition. He quietly married the lady of his love, and

settled down at Sherborne, in Dorsetshire, where he had an estate.

But his active mind was soon busy with larger schemes than house-building and tree-planting. There were many rumors of a city of fabulous wealth in South America. Prevented from going himself, Raleigh sent out a ship to seek this city of silver and gold, and though from this he got no definite news, he was sufficiently satisfied to set out in search of it himself. He reached the Island of Trinidad at the mouth of the river, where he left his ships and in small boats went up the River Orinoco, and along some of its tributaries, fighting against tremendous currents, and against sickness and privation. He was compelled to turn back, but brought with him quartz containing gold, and also the first piece of mahogany ever seen in England. When he got back, his enemies declared that the whole story of his exploration was false. To prove his case, he wrote a splendid book called "The Discovery of Guiana," that being the name by which the country now called Venezuela was then known. He drew maps showing his route, and long after his death all his statements were proved to be true. A gold-mine of which he spoke was actually discovered in 1849. Raleigh's next exploit was in an expedition against Cadiz. He was not the leader, but it was upon his advice that the two leaders acted, and the action was a great triumph for his military genius. In another naval action, under Lord Essex, he again distinguished himself. Indeed, had it not been that the queen was at first so fond of him that she would not let him go out on the earlier expeditions, Raleigh's career on the sea might have been the greatest of the age. Raleigh's success in the second action made Essex, his old enemy, jealous. Essex never forgave him, and after many intrigues he declared that Raleigh had tried to have him murdered, a story that proved to be utterly false.

HOW RALEIGH WAS TRIED FOR HIS LIFE ON A CHARGE OF TREASON

Essex was eventually executed for rebellion, but Raleigh's enemies remained many and powerful. They had their way at last when, in 1603, Elizabeth died, and James VI. of Scotland—a man who in many ways was unworthy of respect—became King James I., of England. Raleigh's enemies pretended to James

that Raleigh had tried to prevent him from coming to the English throne, and James removed him from all his offices. Soon Raleigh was brought to trial on a charge of treason and conspiracy. Raleigh behaved magnificently, with the eloquence of a scholar and orator, and with the dignity and firmness of a hero, but he was condemned to death.

The trial created a great impression. Many men had been offended by his haughty ways, but at this trial they remembered what he had done for the honor and glory of the country. One who had hated him said: "When the trial began I would have gone a hundred miles to see Raleigh hanged; before the trial closed I would have gone a thousand miles to save his life."

Raleigh was taken back to the Tower, but the king dared not carry out the sentence of death. He left Raleigh to languish in prison. His wife and family were allowed to live there, too, on paying \$1,000 a year. Here Raleigh was visited by the great scientists and poets and scholars of the day, some of whom were, like himself, prisoners in the Tower. His best friend, however, was Prince Henry, the eldest son of King James, a fine young prince. The prince loved Raleigh, and declared: "No man but my father could keep such a bird in such a cage."

HOW THE TRAVELER WROTE THE HISTORY OF THE WORLD IN A DUNGEON

For the guidance of the prince, Raleigh wrote some notable works on politics and statesmanship, and began for him his famous "History of the World." This ran to 1,300 pages before the young prince died, and Raleigh then lost heart, and left it unfinished. In it is some of his noblest writing, but it was so frank that the king had it suppressed, because he said it spoke "too saucily of kings."

Raleigh had a little laboratory in the Tower, which he made out of a poultry-house, and in this he conducted many scientific experiments. He found out how to get pure salt from sea-water—an art of which we hear little more until 300 years afterwards. For thirteen years he was kept a prisoner, and men grieved for him. The thought of this great traveler, warrior, and scholar cramped in the little cell at the Tower, which we may see to-day, made their hearts bleed.

In 1616 he was released to go on another treasure-hunting expedition up

the Orinoco. He was allowed to leave prison on the condition that he should bring back to England at least half a ton of gold ore similar to the piece he had previously brought. "It is very difficult," answered Raleigh, "for any man to find the same acre of ground again in a country desolate and overgrown which he hath seen but once, and that sixteen years since." Still, he was willing to try.

THE LAST SCENE IN THE LIFE OF ONE OF THE GREATEST ENGLISHMEN

His crew was composed for the most part of bad characters, and the expedition was a hopeless failure, dogged by storms and sickness. From the first misfortune crowded upon the new venture. Raleigh was held back for months in Plymouth Harbor by the need of money to provision his ships. This difficulty was overcome, and he set sail, only to be forced by storm to take shelter and refit his ships in Cork Harbor. All this took time, and it was not until August that he at length got away on his last voyage. Even then he was followed by misfortune. One of his captains, who was a traitor, left him at the Canary Islands, and went home with a lying tale which was afterwards used against him. He encountered terrible storms, and sickness broke out in the fleet. Several of his officers and his friend and servant, John Talbot, who had shared with him his imprisonment in the Tower, died. Still, in spite of all, he was free for the time, and we can picture the white-haired gallant old man as he walked to and fro on the deck of his little ship, thinking great thoughts of the future of his country, or made observations which afterwards helped other men to avoid some of the dangers he had run.

He reached the coast of South America in November, and prepared to ascend the Orinoco. But he was so ill that he was unable to undertake the hardships of the voyage up the river, and was compelled to entrust the leadership to the captain of his own ship—Captain Kemyss. The result was failure. Near the mine the party was met by armed Spaniards, and Raleigh's son was killed. The Spaniards were beaten back, but the men became mutinous. Kemyss could only lead them back again, and after he had met Raleigh and given his report he killed himself. Raleigh scarcely dared to think of returning home empty-handed. He thought that he would, as in the old days,

capture some Spanish treasure-ships. "They do not call men pirates who capture millions of money," he argued, in the manner of the times. But the men would not follow him, and he had to return home penniless. There had been some fighting between his men and the Spaniards, and as there was peace at this time between England and Spain, this fighting was declared to be a crime worthy of death. Indeed James had promised the King of Spain that if Raleigh landed at any place to which Spain laid claim as her own, he should be executed. James knew that Spain claimed both the shores of the Orinoco as well as every other place in South America, and, therefore, Raleigh's death had been determined on even before he had turned his ship's head toward home. So Raleigh was again cast into the Tower, and led forth to execution at Westminster on October 29, 1618. He was courageous and dignified to the last.

It has been said that on the last night of his life he wrote a beautiful little poem, for which his name will be remembered, but the poem was written long before the last night came, and not in view of the terrible fate which befell him. The poem is called "The Conclusion":

Even such is Time, that takes in trust
Our youth, our joys, our all we have,
And pays us but with earth and dust;
Who in the dark and silent grave,
When we have wandered all our ways,
Shuts up the story of our days;
But from this earth, this grave, this dust,
My God shall raise me up, I trust.

As he laid his head on the block, someone said that he ought to kneel with his head towards the east. "What matter," said Raleigh—"what matter how the head lie so the heart be right?"

So perished one of the greatest men of the great days of Elizabeth. He was not a perfect man; no man is perfect. He had grave faults, but they were the faults of his time. With all his failings he was a hero and a scholar of the highest type. In happier days he might have become famous throughout the world for science, literature, and poetry. With a queen less anxious to keep him at court, he might have become immortal as an explorer and an admiral. As it was he left a record for gallantry and learning equaled by very few men of any country.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5483.

WHAT WATER DOES FOR BARREN GROUND



This barren land has all the elements necessary for plant growth present in the soil, but the sparse vegetation shows that something is lacking. Only a small amount of grass and some straggling bushes struggle to live. There are thousands of acres like this in Western United States. Only water is lacking to make the desert blossom. Look at the picture below and see what happens when water is given to the soil.



This is the same field some time afterward when water has been turned upon the soil. Notice the luxuriant growth of wheat in the foreground, and the signs of human life in the background. Thousands of acres of worthless land have been made fruitful by the application of water. Notice the mountains in the background of both pictures and the line of trees show that the places are the same.



This picture shows the beginning of the great dam at Assouan, which has turned the banks of the Nile into a flourishing garden by storing up the waters of the river for use in time of drought.

MAKING THE DESERT BLOSSOM

THOUSANDS of years ago men knew that they must have water or die. Land without water is but a parched and arid wilderness, and the truth of this is quickly brought home to dwellers under a glaring sun and in shimmering heat. The greatest blessing for which the ancients longed was to dwell "in green pastures by living waters." Their greatest misery was "a dry and thirsty land where no water is." When the Preacher in the Book of Ecclesiastes speaks of "the pitcher at the fountain, or the wheel broken at the cistern," we have a sad picture of what will follow in the hot and dust-blown countries of the East. For he continues, then "man goeth to his long home." To-day the name given by the Arabs to Damascus is "earthly paradise," because of its flowing streams and luxuriant vegetation.

EARLY ATTEMPTS TO WATER THE LAND

In many of the countries bordering the Mediterranean, to the east in Mesopotamia, India and China, and to the west in Mexico and in South America, men learned very

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early to make use of the water available to them. In many cases the streams coming from mountain regions would be swollen at certain times of the year by rains or melting snow. Some of these peoples learned to guide this overflow by rough dikes and rudely constructed ditches, and later built canals to bring the water out to lands which would not be overflowed naturally. Others had even more skill and understanding, and stored their waters for time of need in the dry season. They built great walls across their rivers, thus constructing reservoirs or store-houses for the water. About two hundred years before the birth of Christ, one of these great storage dams, built partly of hewn stone across the valley of Saba in Arabia, broke down, and eight tribes had to leave the district which the water had before supplied.

EARLIEST AND SIMPLEST FORM OF WATER-RAISING MACHINERY

The sculptures and paintings of Egypt show the peasant raising up water from the Nile four thousand years ago. By a simple plan of raising water and pouring it over

the fields, thousands of acres are watered every year in India. The simplest and earliest form of water-raising machinery is a pole with a bucket at one end balanced across a beam, and a weight at the other end. All along the Nile banks, from morning to night, through many centuries, brown-skinned peasants have been working these buckets to raise the water on their lands. We may also see two men raising a shallow bucket by means of strings. Everywhere in Egypt and India, and in Japan, too, can be seen a rude water-wheel, with pots on an endless chain around the rim, worked by bullocks or by men.

THE COUNTRY WHERE IRRIGATION IS MOST HIGHLY DEVELOPED

Have you ever wondered why the Italians are such wonderful growers of vegetables and fruits? One of the reasons is that they have in the northern provinces of their country the most highly developed system of irrigation in the world. If you look at a map of Italy you will see that its northern end is encircled by a lofty range of mountains called, by a general name, the Alps. The rivers of this part draw their waters from the never-failing glaciers of the mountains, which melt when warmer weather begins. Thus the supply is available in summer when it is most required. It is so regular that the people are able to count on so many thousand cubic feet per second through so many months. A great Italian statesman and patriot, Count Cavour, about the middle of last century, organized a complete system for distributing this water. In each parish in the district is a council composed of all landowners who irrigate. Each council sends two members to what may be called a "water parliament," which manages the whole scheme. The irrigated area is divided into districts, in each of which is an overseer and a staff of watchmen to see to opening and shutting of the gates which deliver the water into smaller channels. In November every year it is decided in the "water parliament" how much water is to be given to each parish in the following year, and this depends on the number of acres of each crop to be watered. The Italian farmer submits very loyally to whatever regulations are made, though sometimes if he opened a sluice during a dark night and allowed

the water to run for a few hours he might double the value of his crop.

A LAND WHERE FAMINES RECUR REGULARLY

Parts of India are nearly rainless, and there can be no cultivation without irrigation. Other parts have a heavy rainfall at certain seasons, and are rainless the rest of the year. Rice, a very valuable crop, is almost a water plant, and needs a constant supply passing over it. Maize and millet, which form so large a portion of the peasants' food, can be raised without irrigation in ordinary years, but about every eleven years comes a season of drought. These droughts have been followed by terrible famines in which thousands of people have died. Since about 1878, which saw the end of a very bad famine, there has been a large sum of money set aside every year to provide for irrigation and reservoir works. The Chenab Canal, the largest in India, which waters the province of the Punjab, has turned land that was practically desert into a thriving agricultural region inhabited by prosperous peasants. Similar canals stretch like a network from the sacred river of the Hindoos, the Ganges, upon whose banks live a teeming population.

HOW THE WATER SUPPLY HAS BEEN CONTROLLED IN THE UNITED STATES

In much of the western half of North America, profitable farming depends upon an artificial supply of water. In many sections less than 20 inches of rain fall each year. An inch of rain means enough water to cover flat ground to that depth. In Arizona and New Mexico remains of water works have been found which date from very early times. When the Spanish explorers came to the Rio Grande in the first half of the sixteenth century they found the native inhabitants practising irrigation or artificial watering. The early Spanish missions also built works in that valley sometime during that century, and this, so far as known, was the beginning of modern irrigation in the United States. Some of the works made by the early Spanish settlers have been in use almost up to the present time.

In 1847 the Mormon settlers began to irrigate the Salt Lake Valley, Utah. This was the first Anglo-Saxon irrigation in the country. About twenty years after the work was taken up in Colorado

HARNESSING 1,000 MILLION TONS OF WATER



The great dam across the River Nile at Assuan, which stores up a thousand million tons of water for use as it is required, is one of the engineering wonders of the world. It took over four years to build, and contains more than a million tons of masonry and 75,000 tons of cement. Much of the granite used came from the same quarries as the stone for the facing of the Great Pyramid, which contains five times as much masonry as the dam. Assuan was chosen for the dam because the river is there broken up by islands. Barriers were built above and below the site, and the water in between was pumped out so that foundations could be laid in the river-bed. Foundations were also laid on the islands, for the dam is built across river and islands.

and California. From these beginnings the practise gradually spread to the other states of the arid West. Fifty years later the census showed about seven and a half million acres under irrigation, which for the most part was brought about by farmers joining to plough out or dig ditches from the rivers. There were also some big structures for the sale of water, such, for example, as the Sweet-water dam of South California and the Arizona canal. Since 1900, when the United States began what was called its "conservation" policy, or the preserving of natural resources of the country—its forests and beautiful park lands—irrigation has made rapid progress aided by Government money.

THE HIGHEST DAM IN THE WORLD

In 1915 the highest dam now existing in the world was completed on the Boise River in Idaho. Dam and reservoir took five years to build. The Government invested over twelve million dollars in the scheme, and within twenty years the farmers will have returned this sum. Because of the supply of water now available, about 235,000 acres of barren sage brush desert will be turned into gardens, orchards, and farms, and the crops on many thousands of acres will be saved each year. The dam is 348.5 feet high, 1,100 feet long on top, contains 585,200 yards of concrete, and its crest carries a roadway 16 feet wide. When the water in the reservoir is needed for irrigation, it is carried twelve miles in the channel of the river to another low dam, and from these it is taken out over the land through a network of canals.

With irrigation, agriculture in an arid region yields larger returns from an area than in rainy regions, because daily sunshine is the life of plants. If we can supply moisture at proper times and in the exact quantity, we can make the values of ordinary farm crops from 50 to 75 per cent greater than in an equally well-farmed part of the humid region.

In Africa, under a pitiless, burning sun, rolling away into distance for ever and ever, lie over three and a half million square miles of desert—the Sahara, as big as all Europe. Half stifled by the dust half blinded by the glare, and half frightened by the terror of this immense waste of the earth's surface, generations

of men have gone by, leaving it there as a miracle of God, something that passes the power of man to alter, or the wit of man to comprehend. The Nile overflows its banks and leaves a coating of mud over a part of this desert. The people throw seed upon this slime, and wait for it to grow. But when the Nile failed to overflow its banks, famine came upon the land, and men used to die like flies.

The engineer came to the desert, looked at it, looked at the mighty Nile, and then said: "This can be altered!"

While the desert fainted for moisture, the Nile was carrying millions of tons of water to the sea. The engineer said: "I will stop that waste of water!" And then followed one of the mightiest works ever undertaken by the children of men. Two great dams were built across the Nile. There was a woeful outcry from sentimental travelers. "You will drown the beautiful ruins of Egypt; you will spoil the wonder of her scenery!" But the engineer worked on. His object was not to guard the pillars of an empty temple, but to convert ruin into life. And this he has accomplished. He has made the desert blossom and bring forth food for the use of man.

THE ROMANCE OF THE BRITISH ENGINEER IN THE LAND OF THE PHARAOHS

Camels, like those which crossed the desert with spice in the days of the Pharaohs, have been harnessed by the British engineer to this tremendous task; they have come across the desert with the implements he needed, and have stood beside the steam-engine, in the midst of masonry and stacks of steel and iron, listening to the clatter of the hammers, the scream of the engines, the shunting and bumping of the trucks.

Ten thousand descendants of the ancient Egyptians have worked under British instructors in the building of these dams, chattering in their ancient language as they carried steel forged in modern England. What an amazing romance it all is!

Perhaps it is best for the world that the engineer should not be honored as a great hero. But we do well to remind ourselves sometimes how enormous is the debt which civilization owes to this quiet, thinking man of action, who makes the earth a happier and a far more comfortable habitation for mankind.

SHUTTING OUT THE RIVER FROM ITS BED



The temporary barriers to close the channels were built by dumping huge stones into the river, and sometimes blocks weighing four or five tons were carried away like pebbles by the rush of water. In this way the river was diverted from the different channels in turn. Here a channel of the river is being closed.



This picture shows a channel almost closed. Masses of rock, four or five tons in weight, are being let down by a crane. Finally, trucks full of stones were thrown into the gap, and the barrier completed.

DIGGING A CHASM IN THE BED OF THE RIVER



The stone barrier was supported by a barrier of sand, and another sand barrier was built down stream, with 1,500,000 bags of sand. It was not necessary to make the down-stream barrier so strong because the force of the water was broken by those up stream. Here we see one barrier completed and another nearly finished.



As soon as the water was pumped out of the river between the two barriers, work was begun upon the foundations of the dam. So unstable was the river-bed that the engineers had to dig forty feet deeper than they had expected, in order to get a sure foundation. Another dam to regulate the water stored up at Asman was at the same time built at Amout, 100 miles down the river. Here 17 steam-pumps pumped from between the temporary barriers 73,000,000 gallons of water daily, enough for a city population of 2,000,000.

BUILDING THE STRONGEST WALL IN THE WORLD



Here we see building operations on one of the islands. Twenty thousand laborers were employed upon the dam, and work went on day and night, arc lamps being used after dark. Great preparations were needed for the care of so many men, and a year was spent in building a town of huts and laying railways to the quarries.



The dam, which is the strongest wall in the world, is a mile and a quarter long and a hundred feet wide at the foundations. The height varies, but the greatest height from the foundations to the top, as originally built, is 130 feet. The south side of the dam, against which the stored water presses, is perpendicular, the north side slants, as shown, so that the dam may resist the enormous pressure of water on its other side.

WORKING IN THE BED OF THE RIVER



This picture shows how the laborers carried blocks of granite from the quarries to the railway. Everything possible was done for the comfort of the workers. When the Alexandria canal was built, 20,000 workmen died in the trenches, chiefly from sunstroke, but at Assuan scarcely a man died from this cause. Tents were set up at intervals, and when a man was overcome by the heat he was immediately taken to a tent and placed in an iced water bath, and a doctor was telephoned for. Telephones were fixed in all these tents.



Here we see the busy scene at the bottom of one of the channels of the river, which was kept dry by the temporary barriers and the steam-pumps. Trains from the quarries ran on to the bridge, from which the blocks of granite were lowered to the dam. It would have been impossible to build the Assuan dam in this way if the Nile had had more than one flood a year, as work was impossible during the flood.

PILING UP A MILLION TONS OF STONE



This is the same place as that shown in the lower picture on page 5422, but this photograph was taken a few days later, and we see how rapidly the work progressed. The dam is faced on both sides with very hard granite, properly shaped, while the inside is formed of rubble, or rough blocks of different sizes and shapes.



As flood time approached, need for rapid work increased, so that the dam might be sufficiently firm to resist the waters. On the left of this picture are some of the sluices, or openings, of which the dam has 180. The huge gates that close these sluices average twenty feet in height and six and a half feet in width, and they withstand a pressure from the water of 210 tons. Yet the gates can be opened or closed quite easily.

THE GATES THAT SET FREE A WORLD OF WATER



The sluices in the dam are lined with cast iron, and here we see them being built. When all the sluices are open, the total width available for the passage of water is 427 yards, which is a little less than a quarter of a mile, and the water passing at any moment is equal to twice the flow over Niagara Falls.



Once a year the melting of the snow in the Abyssinian highlands makes the Nile a rushing torrent, and by the time the river began to be in flood in 1900 the great dam was built as high as the top of the iron linings of the sluices. I saw the up-stream temporary barrier was broken slightly, as shown here, and the rush of water soon swept away the barrier, which was no longer needed. The shock of water pouring through the sluices destroyed the loose bed of the river, and a granite "apron," or floor, was laid for some distance from the dam.

THE LAST WILD RUSH OF THE UNTAMED RIVER



Here we see the river rushing through the sluces after the up-stream barrier had been burst. As can be seen in the picture below, the water rose until it swept over the top of the dam, but work was continued until the water had almost reached the top. Tools and cranes were then removed, and for the last time the untamed river rushed on its mad course to the sea. By the following year the waters had been harnessed.



The unfinished dam is here seen at the mercy of the flood, which almost carried the railway lines away. The original idea for the dam was that it should be built high enough to store 2,500 million tons of water, but this would have meant the flooding of the ancient temple of Philæ for a part of the year. To save this temple, therefore, the dam was made lower, and the store of water reduced to a thousand million tons. This, however, proved to be insufficient, and now the dam has been raised to store the larger quantity.

THE MIGHTIEST RESERVOIR IN THE WORLD



When the flood subsided, work was resumed, and here we see it being completed. The Aswan dam, with the Assiout and other barrages—as the dams are also called—lower down the Nile, all a part of the great scheme, is considered one of the greatest engineering feats in history. The foundations of the Aswan dam are built into the rock, but those of the Assiout barrage rest on sand, and are kept in position by their weight.



This picture shows the Aswan dam as finished in 1902. It has given to Egypt the mightiest reservoir in the world. The machinery along the top is for opening and closing the gates. When the Khedive opened the first five of these gates and let the water through, he used a key made in the shape of an ancient Egyptian amulet that was the symbol of life, because the wonderful dam that had been built meant life for Egypt.

LETTING LOOSE A MILLION TONS OF WATER



This is the south wall of the great dam that now stores up as much water as would supply several states for a year. Since the extensions have been completed, it stores up more than twice as much. Already, by means of this dam and the barrages lower down the Nile, over 400,000 acres have been watered, and have increased in value to the enormous extent of \$140,000,000. The irrigation works cost about \$30,000,000.



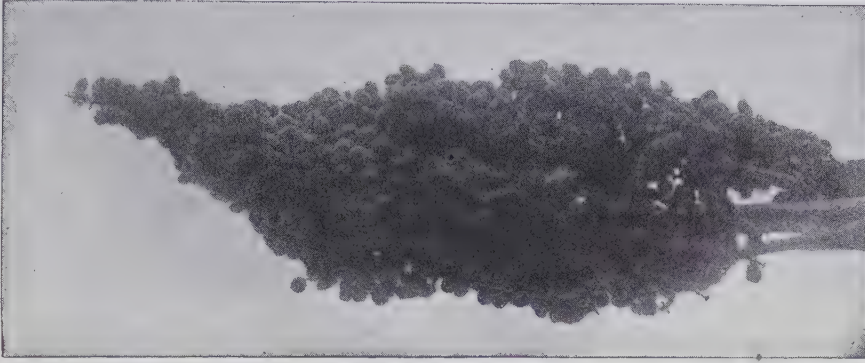
The great sluice gates, which hold back a thousand million tons of water, are opened by electricity as easily as the turning on of a light, and the torrent of water which sweeps through the openings presents a magnificent sight. More than a million tons of water rush through in twelve hours, and it is true that this wonderful torrent, controlled and regulated as it is, makes the wilderness blossom as the rose. A deep channel through the dam, for shipping, with four huge locks, keeps the river open for navigation by the largest river steamers.

THE NEXT FAMILIAR THINGS ARE ON PAGE 5527.

RIVERSIDE DRIVE AND GRANT'S TOMB



Here is a picture of Riverside Drive with its long vistas of trees, and Grant's Tomb, its white dome outlined against the sky. Beyond is the Hudson with the Palisades dim in the distance. You will notice that the Drive is divided into four roadways, two for equestrians and two for carriages. Those traveling uptown keep to one side of the Drive, and those going downtown to the other. Riverside Park, one of the most attractive parks in New York, is to the left, and runs for miles between the drive and the river.



The Fruit of the Sumac.

AMERICAN TREES IN WINTER

HOW many of us can name the trees we see in winter? Yet, if we have ever walked through leafless groves with a skilled woodcutter, we have found that he can recognize the different trees very readily. When the trees are thus crowded together he identifies them chiefly by the bark—the smooth gray bark of the beech, the deeply furrowed bark of chestnut or walnut, the silvery, or golden, or rich brown coat of the birches, and so on.

Even we can see the difference between the pale, smooth skin-like covering of a beech-bole, which always tempts us to mar it with our initials, cut deep with a penknife, and the chalky-white covering of the "silver-vested" birches, that curls back in thin sheets. If we should tear off a strip of this, we should find that it would come away like a ring, leaving a belt of fawn-colored under-bark encircling the trunk. How different both of these are from the ragged fibrous bark of the cedar, from which shreds are continually fluttering in the wind, or from the rough, somewhat scaly bark of the white pine, and the furrowed bark of the chestnut, which reminds us of lattice-work.

When we take our winter walks, it will be amusing to see how many of the commoner trees we already can

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tell by sight. The evergreens, of course, will be the easiest to know. Nearly every park has plenty of them; but we can find several others growing wild in the fields and woods.

THE ODOROUS CEDARS COVER THE CONTINENT FROM SEA TO SEA

The cedar is perhaps the most common. There are several species known by this name, but they look very much alike, and together they cover this continent from ocean to ocean. We often see young trees, with tightly crowded foliage, and shaped exactly like a paint-brush, standing in rows by fences, velvety-green where the sunshine rests upon them, but almost black in the shadows. The fragrant little leaves, like scales, are wrapped around the twigs, and on some trees, bluish berries nestle among them. These bring the pretty, gray-brown cedar-birds, with their wing-feathers tipped with something precisely like drops of scarlet sealing-wax. They whisper quietly to each other as we pass through the cedars, then return to their feasting on the resinous berries.

Other birds come to the cedars for shelter, and they carry off streamers of the fibrous red-brown bark to weave into their nests. Long, long ago the Indian, too, learned how to weave the bark into ropes and sandals, although

it is short and brittle. When the trees grow in groups, the trunks grow straight and tapering like masts, but when in fields or on the tops of sand-dunes, where the wind blows them roughly, the cedar tree becomes broad and low, and often one-sided—a tree that painters love to draw.

Its rosy wood is very fragrant, and campers delight to throw it on a bonfire so as to smell the odorous smoke. This fragrance seems to be disagreeable to moths, however, so that chests for woolen clothing are made from cedar wood. It is also the best material for cigar boxes. It is so soft and easily cut with a pen-knife, that nearly all of our pencils are made from the wood of the odorous cedar.

THE YEW TREE, FROM WHICH BOWS WERE MADE

We have all heard the story of the English yew, and how it was bent into bows that made English archers famous. It is interesting to discover that on the Pacific coast there is another yew which looks very much like that of the Old World. It has the same flattened spray with rigid leaves, and the tapering cedar-like trunk, which reminds one of a group of slender columns pressed closely together and covered with a purplish, shaggy, fibrous bark. Its wood is tough and elastic and the Indians have always used it for bows and paddles just as the Europeans did. If we find a yew tree, however, we must be careful not to chew the foliage, or to eat the seeds nestling in the bottom of a scarlet, fleshy cup, for both are likely to poison us.

THE TALL MAST-LIKE WHITE PINE

There are many kinds of pines, most of them valuable, which grow in America. We generally think of them as furnishing tar, pitch and turpentine (called naval stores), or lumber for many purposes. In fact, this was the reason why the magnificent white pines of New England were considered to be so important that Maine is called the Pine Tree State; and explains why she placed a figure of a pine on her colonial shillings and flag; and finally included a pine tree in her state coat of arms.

But only where the white pine grows in an open space, do we see it spreading in the broad pyramid-like form that we think of when we say "shaped like a pine tree." In forests it grows tall and straight,

the lower limbs being killed by shade. It may even reach the height of two hundred feet; and these giant, tapering trunks, of firm, compact wood and straight grain, were sought as masts for sailing vessels as well as for many other purposes. Nowadays, so many white pines have been cut down that the lumber is rather scarce, and pines with harder wood, or inferior woods, are used in their place.

There are five "needles," as the leaves are called, growing together in each little case or sheath. This is a point to be remembered. The cones are long and slender, with thin, narrow, shingle-like scales, that readily open. These scales (in some pines they are thick and stiff and knobbed) in all pine cones, serve as little roofs to shelter a pair of winged seeds fitted into hollows at their bases. When the seeds are ripe and the weather is warm and dry, these pent-house roofs are raised, and allow the seeds to fall out and twirl to the ground. But as soon as the weather becomes damp, the scales slowly shut down, and overlapping, or fitting close, keep the seeds from becoming wet. The scales act also as a protection or armor, to defend the seeds from the attack of animals. But they are not proof against the clever red squirrel, nor the attacks of certain birds called "cross-bills," that have bills with crossed halves, which look very queer, and as if they would be perfectly useless, but are nevertheless just right for tearing apart the pine-cones.

THE SUGAR PINE OF THE PACIFIC COAST

On the Pacific coast, we shall find another pine, quite as large as the white pine, which has a huge cone more than a foot long, but scarcely more than the width of a palm across. Out there, the Indians make up nutting-parties to get pine seeds, upon which they live, and this pine gives them some nuts. It is called sugar-pine, we are told, because it is one of the several trees with sweetish sap-wood, that is scraped off by Indians for a delicacy.

THE GRACEFUL HEMLOCKS MAKE A REFUGE FOR THE BIRDS

Our Eastern hemlocks do not seem to have tempted any one to eat them, unless partridges indulge in the tender sprays. Heretofore hemlocks furnished much of the cheap, splintery lumber used in house-building, but like every other great tree,

WHITE PINE AND BLACK WALNUT



The most magnificent eastern pine that formerly grew in great forests in northeastern America. It is being sparingly replanted, and will thrive in light sandy soil. The tree is valuable for tar, pitch, turpentine and lumber. Magnificent forests of white pine covered a large part of Maine—the Pine Tree State—and the tree was placed on the coat of arms of that state. The tall, straight trunks make the best masts for sailing vessels.



This tree, in forests, has a tall, straight trunk with deeply furrowed, dark-brown bark and heavy limbs. The nuts are nearly round, of dusky hue, with a hard shell, with shallow ridges. The tree was so common at one time that the wood was used for fences; but such wasteful methods were employed in cutting it that few fine specimens are left. The tree bears rich nuts in a very hard case, enclosed in a spongy green hull which becomes dry and hard as the nut ripens, and finally falls away.

they have been killed out; the use of the bark for tanning has helped.

A hemlock tree forms a splendid refuge for little birds as well as for the owls and vicious beasts that prey upon them. Many a ruffed grouse and rabbit has snuggled warm and dry under a low, swinging hemlock branch weighted down by snowdrifts. It is easy to tell the hemlocks. The narrow, little leaves are arranged on two sides of a twig, forming a knife-like spray, and their cones are very tiny. The tree, especially when young, is one of the most graceful of our evergreens.

Young hemlocks are likely to perch themselves on rocky ledges where they seldom get a good foothold for their roots; hence, they frequently blow over. They seem to be, also, a special mark for lightning: I have seen a little tree in half a second stripped of all its greenery and branches, while the white core, broken at the top, and still glistening with sap, protruded from the wreckage, standing piteously among its feathery, untouched neighbors.

THE FAN-PALM OF THE ARID SOUTHWESTERN SECTIONS

In the South and West, not only the cone-bearing trees, but other kinds carry their leaves over the winter. California boasts of its great fan-palm, one of the few native palms, which sometimes grows sixty feet high, and which is often used in gardens to give a tropical air. The dead and dried leaves of many years droop in a shaggy mass, like a great fringe, beneath the living crown of green fan-shaped foliage.

THE PALMETTO GIVES A TROPICAL AIR TO OUR SOUTHERN COASTS

South Carolina, on the other hand, prides itself on the palmettos, trees which stand stiff and quaint along her coast, as well as along the coasts of more southern states. Although of no great value as a timber tree, the palmetto has been closely connected with the history of the state. As every school child remembers, a Revolutionary fortification on one of the islands in Charleston's beautiful harbor was built of earth and palmetto logs. These are spongy and elastic, and when the British fleet in 1776 bombarded this fort, the logs received and embedded the balls without splitting.

The palmetto appeared on a medal and on the upper corner of the flag of South

Carolina—"the Palmetto State"—at the beginning of the Civil War, and a crooked palmetto rises in the centre of the state's present seal.

During the Civil War, the tree with a rattlesnake (apparently twenty or thirty feet long) wound about its trunk, was figured on banner and cockade, made of strips from its foliage, and on the seal of the seceding state. Oddly enough, none of these pictures shows the proper palmetto foliage, each leaf of which is shaped like an ordinary palm-leaf fan, split at the edges into slender divisions.

Strips of these leaves are woven with rushes, into baskets and various trifles. The bases of the young leaf-stalks, surrounding the solitary bud at the very tip of the trunk, are filled with long, strong fibres. This bud, containing all the growing parts of the tree, is ruthlessly cut out, killing the palmetto, in order to get the fibres, which are made into brush-bristles. The bud, itself, is cut out by Indians and negroes and boiled as a vegetable—whence the name, "cabbage palmetto."

THE EVERGREEN OR LIVE OAK OF THE SOUTH

Both East and West have evergreen or "live" oaks in their southern parts. The live oak of the southeast is generally draped with quantities of Spanish moss, but that of California displays its dome-shaped head without the hoary veil. The leaves of the latter oak resemble those of holly, and remain on the tree until the new ones appear. The acorns are long and slender and are eaten by Indians, when better ones cannot be obtained.

THE BUTTONWOOD, SO CALLED FROM ITS BUTTON-LIKE FRUIT

Of all the many trees that shed their leaves in the winter, there are several that one can learn to know at a glance. Probably the buttonwood is the easiest to discover, but we must look for it along the banks of streams or in damp places, for although it grows elsewhere, the buttonwood likes to have plenty of moisture for its roots. In fact, it often grows so close to water-courses as to be undermined by them, and then tumbles in, while the great disc of roots rests edgewise on the bank. This tree can be seen afar, for great flakes of its dingy thin bark fall off, leaving curious white patches of inner bark gleaming on trunk and limbs. Countless balls of seed swing



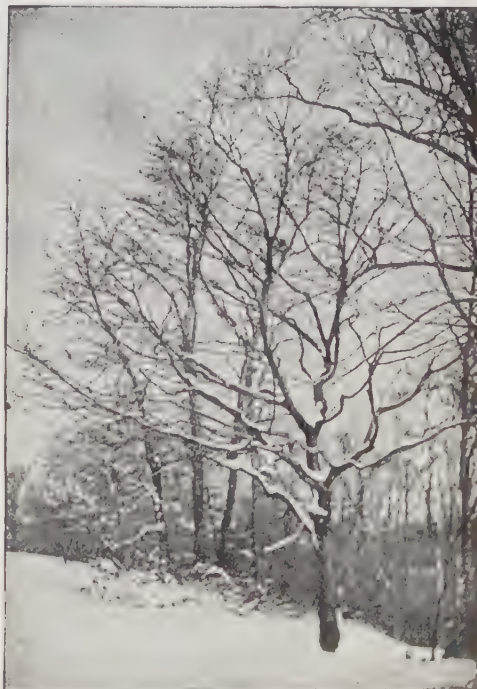
The sugar pine is a magnificent western tree with a straight, thick trunk sometimes more than one hundred and fifty feet high. Huge cones over a foot long hang from the tips of the branches.



The Washington fan palm grows in the deserts of California, and is useful for planting in arid soil. It sends its strong roots far down into the sand in search of moisture. The top is like a feather-duster.



The sabal or cabbage palmetto gives a tropical look to the southern coast. The bases of many leaf-stalks remain on the trunk and look as though they had been braided into a thick mat.



The hornbeam forms a very pretty rounded head with beech-like leaves. Its lower limbs are somewhat irregular in growth. The seeds are sheltered by a three-lobed bract in catkin-like clusters.

gaily from its clumsy branches through the winter. Towards spring they are broken up, being composed of little nuts, each with a tuft of rusty wool, and the birds help to tear them apart. In the Mississippi Valley the buttonwoods (or sycamores, as they are often called) grow to a great size, but are then often decayed within, only a mere shell of their wood and bark surviving. Early settlers utilized these vast hollow trunks, sometimes ten feet across, for smokehouses, grain-bins and the like, and even constructed shelters for themselves, by cutting great pieces of the thin walls of the cavity.

THE HORNBEAM, OR IRON WOOD

Not far from the sycamore, we may find the small shapely hornbeam or iron wood. Both of these names refer to the extremely white and surprisingly hard wood contained in the slender furrowed trunk. So tough is it, that home-made brooms could be fabricated out of fine strips of iron wood. A "withe will last almost as long as iron wire, and an ox-gad . . . is nearly equal to a leather one."

The flexible branches of the European hornbeam, which closely resembles ours, were woven together to make those curious walled and roofed alleys of old-time gardens. Blue beech it is sometimes called, from its blue-gray bark smoothly stretched over its hard-looking, irregular trunk and limbs, and from the similarity of its foliage and round head to the larger tree.

THE RICH CRIMSON BERRIES OF THE SUMACS

We shall doubtless see some sumacs when we are tramping across barren fields. There is nothing easier to distinguish on account of the cone-shaped masses of berries, each covered with crimson plush, which hold their own bravely during the winter.

In another article, we have spoken of the poison-sumac with its poisonous, dry white berries hanging like grapes. While all are closely related, it is to be remembered that any sumac with velvety, red fruit is safe to handle. In fact, one may taste the red plush berries, which are very acid, and not agreeable. Chickadees love them, and revolve about the spires until they gradually swallow all the seeds. In winter, we see why the staghorn is so called. Its thick, awk-

ward, extremely brittle branches have a curve upwards not unlike a deer's horn.

THE SHAGBARK HICKORY, FAMOUS FOR ITS NUTS

Probably the shagbark, that tall, handsome hickory which farmers often leave standing in their pastures on account of the sweet-flavored nuts it bears, will be an upland tree that we shall soon espy. If it is a full-sized tree, it will have a rather small and narrow head with a few crooked branches, bristling with smaller ones, pointing more or less upward. The trunk is generally tall, straight and slender, and it looks as if it had been shingled rather badly. Long narrow strips of its gray bark have become loosened at the sides and lower end and are attached only at the top, whence they hang like flaps or "shag." The hickory is famous not only for its seed-kernels, but for its strong, durable wood, which also makes splendid fire wood.

THE SASSAFRAS, KNOWN FOR ITS PUNGENT BARK

In searching for the shagbark, let us not confuse with it the quaint sassafras. It is also rather tall and straight but has a peculiar crown. The branches look as though they had started to grow to the right, then to the left, then swing back, and so on. The branchlets grow stiffly and crookedly upward, giving an oblong, round-topped outline which curiously reminds one of a many-branched candlestick. The lower bark is deeply furrowed, gray and corky-looking, but the upper and smaller branches are smooth and yellowish-green.

The sassafras is one of the trees that grow smaller and smaller as they go northward. In New England it is almost a shrub. But it is extremely difficult to get rid of, for the merest fragment of root will start growing. These aromatic, warm-tasting, orange-skinned roots are the most valuable part of the sassafras. Probably the colonists learned to include them in root-beer by discovering that the Indians before them had made a drink out of sassafras.

THE WALNUT—A HANDSOME TREE, WITH FINE DARK WOOD

At one time there were many black walnut trees scattered throughout our timbered lands, especially in the great forests of the Middle West. They were so common, and the wood was so readily split, that people made fence-rails out of

FOUR INTERESTING TREES



The shagbark is one of the most valuable hickories, both as a timber tree and for fuel. It is sparingly cultivated for its pleasant flavored, thin-shelled nuts.



The sassafras is a quaint little tree of small value for timber. It is aromatic in bark, leaf and root, and is used for root-beer, sassafras tea, and other purposes.



Mesquites spread into wide low domes of finely-divided foliage. This species is known as cashaw in the West Indies, where it is scattered over dry plains with the spine-girdled palm (*acrocomia*).



There is an astonishing amount of the hard, heavy wood of the mahogany used in tropical America for furniture, and otherwise. Its beauty varies with its grain, and the color of the stain used.

THE BEAUTY OF THE TREES IN WINTER



Birches are frequently planted in parks for the sake of their beauty. Their lovely delicate spray is justly appreciated in winter, especially in the weeping varieties, where the twigs are elongated. Some of the American birches grow to a height of seventy feet or over, and the hard wood is valuable for a variety of purposes. The Indians make canoes and articles for household use from the bark of the paper birch.



Hemlocks usually grow on cool rocky hillsides, and sometimes have so slight a roothold that they blow over in tempests. They seem to attract lightning.



The cedar is one of the most picturesque of our evergreens. Its wood is used for pencils and cigar boxes. It was a sacred tree to many Indian tribes.

TWO TREES OF PARK AND STREET



The catalpa is a splendid tree when in flower. The white, purple-spotted corollas are borne in great panicles. The flowers are followed by long green bean-like pods. The leaves are broadly heart-shaped. The wood is fine and smooth, and is used in cabinet work where wood of a light weight is required. The tree is often planted in parks and on city streets, where its handsome flowers make a brave show in July.



This great tree, the buttonwood, or sycamore, as it is often called, is sometimes planted, like its European relative, in city streets, where it apparently thrives. In its native woods, the buttonwood sometimes grows to a height of over a hundred feet and usually alongside of streams, into which it frequently falls, blocking the current. A picture of the European plane tree, or sycamore, is shown on page 3536.

them, saving one or two trees somewhere, perhaps, for the sake of the rich nuts. Then there was a call for black walnut as a material for cabinet-work and furniture. Its rich-brown, hard and firm wood can be readily polished and is light as well. But the demand for it, and the wasteful ways of the early settlers, caused the larger trees to be entirely destroyed, and we seldom see fine specimens unless they have been saved near houses, or in an occasional pasture. Then we shall find that it becomes a noble tree with broad, rounded head, supported by a straight trunk, and wide-spreading heavy limbs, somewhat awkward in their manner of branching. The lack of delicate spray, and the odd, horn-like arrangement of the stubby branchlets, give the black walnut, when leafless, an unfinished, gaunt look, which, with the dark-brown furrowed bark, will help to tell us what it is.

THE SPLENDID HEAD OF THE MAJESTIC WHITE OAK

The white oak at first glance might be confused with a field grown black walnut, for it also has a splendid dome-like head. But its branches more regularly, is straighter, and is subdivided into smaller twigs. Its immense lower limbs stretch far out, level with the ground and not far above it. It is apt to have many faded leaves clinging to the twigs throughout the winter. They are oval in shape with regularly and deeply indented edges. The bark is rough and pale, and the wood is also light-colored, tough and elastic. One should always be able to tell the white oak either in winter or summer, for it is one of the most valuable of our trees, not only on account of its majestic form, but for its timber.

THE CATALPA'S BEAUTIFUL FLOWERS

A wild-wood tree, that we shall scarcely find growing north of Philadelphia except in cultivation, is the catalpa, or Indian bean, as the settlers in the South called it, having an idea that the slender cylindrical pods looked like snap-beans, and being in the habit of calling any native object "Indian" this or that, whether the actual Indian had anything to do with it or not. Certainly no Indian had any interest in the "beans" of the catalpa, for they contain nothing but rows and rows of winged seeds overlapping one another and forming a central

rod in the leathery shell. But the pencil-like pods swinging from the twigs all over this ungainly tree, with its short trunk and wide spreading, not to say sprawling, branches promptly give us a clue to its name.

THE BEAUTY OF THE BEECH AND THE BIRCHES

The catalpas lack that delicate feathering of small twigs that we call "spray," but this is the chief feature of the elm, the beech and the birches. The beech's twigs grow smaller and finer as they approach the ends of the branches and are finished by the long, sharp leaf buds; but the birches have the most exquisite "spray" of any of our trees, except perhaps that of the American elm. In fact, winter is the best time to see the birches, for then the delicate twigs, too fragile, it would seem, to stand the stormy weather, but really so flexible as to bend before it and thus escape danger, stand out clearly against sky and snow. And, when spring comes, and the yellow-powdered tassels are trembling on the spray, how they are tossed and flung about by the elastic branches, thus scattering the fertile powder to be carried on the wings of the wind. If the birches had no value as timber-trees, or oil producers, or bark-furnishers, for the many uses of the Indians, they would still be of inestimable value as ornamental trees for their spray alone.

Other trees may be recognized in winter by their sprays. Of course the evergreens can always be studied at this time, but trees which lose their leaves can also be named, such as the pepperidge, with its shelf-like branches closely set with tiny branchlets, which bristle in every direction. Then there is the hackberry, with its fine spray rather like that of an elm but dotted with numerous small, round, dried fruits. Birds eat the thin, sweet flesh. The dogwood, too, may be known in a moment by its up-turned twigs, topped by gray, squarish buds like buttons. Color in the woods appears when the sprays of willow and maples are painted with pale-green and gold and rose tints, which proclaim the coming of spring. Certain shrubby dogwoods also wear the spring's livery, but children know best the black and gold of the willow-wands, on which crouch silky pussies under their shell-like tents. The children bring great bunches home.

THE NEXT NATURE STORY IS ON PAGE 5505.

The Book of OUR OWN LIFE

WHAT THIS STORY TELLS US

NOT so very long ago, all people thought that alcohol was a good thing at all times. If a special effort were to be made, it was thought that the best preparation for it was to take a dose of alcohol. But we know now that it is not good. Alcohol does not feed the nerves and strengthen the muscles. It only stimulates them, and if a great deal of alcohol is taken, or in some cases even a little, the stimulation is carried to such a degree that self-control is lost. The effect of alcohol upon a developing brain is as bad as it can be, and no young person who hopes to make a name in the world should touch it in any form. Happily the world is commencing to see that it can do without it.

ALCOHOL, THE ENEMY OF LIFE

ALCOHOL, the product of the fermentation of sugar by the yeast plant, forms part of the daily diet of many people, and is consumed in this country in enormous quantities. In various parts of the world, and very notably in our own country, large areas of land are devoted to crops that yield a quantity of sugar, or of starch that can be readily turned into sugar, for the production of alcohol.

In this country, we have been spending more than \$1,000,000,000 a year on alcoholic drinks. And this large sum is not spent in building up the bodies of men and women and growing children. It is worse than lost, for the effect of alcohol upon the nation, and especially upon the youth of the nation, is such that if we threw the money into the sea every year, we would be a thousand times better off. As it is, we buy with it poverty, and crime, and cruelty to children, disease, insanity and death, all of them in rich abundance. Wealth is either life, or what served life; *illth* is what injures life. And men take our essential wealth—the land, the sunshine, the water, the air, and good useful food stuffs like grapes and barley—and turn it into these dreadful things.

But all this, we shall study later. Meanwhile, remember that what we spend on drink would buy us a hundred battleships every year, to defend our coasts.

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CONTINUED FROM 5306



It is true of every living creature, without exception, that poisons are more injurious to it when it is young than when it is grown up, because when it is growing it is developing. There is a great difference between growth and the miracle of development, and development may be stopped while growth goes on. Alcohol will do this, for alcohol is a poison, and there is no form of life that it cannot destroy, if it is used in sufficient quantities.

Not even tuberculosis, one of the most deadly of diseases, causes so many deaths as alcohol. Tuberculosis is what is called "catching," for it is due to microbes which spread from one person to another. It used to be thought that children did not suffer from it, but now we know they do. There is, in this country, a terrible amount of tuberculosis among little children. Fortunately, however, we do not always catch diseases, even when their microbes enter our bodies. The microbes are the seed, but our bodies are the soil, and the seed cannot grow if the soil be unsuitable.

ALCOHOL HELPS TO SPREAD TUBERCULOSIS

Breathing foul air seems to make the soil ready for tuberculosis. That, of course, is why we sleep with our windows open. But there is another thing which makes the soil much more ready for the growth of this deadly seed, and that is alcohol. Ignorant

people believe that alcohol opposes tuberculosis, but this is not true. It has been proved that there is much more tuberculosis where the quantity of alcohol drunk is large, than where it is small. A district which consumes about three times as much alcohol as another district, has more than three times the death rate from tuberculosis.

Now it has been generally supposed that children do not get alcohol to drink in this country; that even those who go into saloons very rarely get any alcohol given to them. But we are learning that this is not the case, and that the state of things here is not so very different from that which has been known for some time in Europe. There is a law against the sale of alcohol to children; but unhappily foolish parents often let their children drink it, not knowing that it is poison to them.

In Germany and Austria the most serious alarm has been caused by the discovery that not merely women—which means mothers—but also children take far more alcohol than used to be supposed. Of the total number of school children in Vienna, one in three drinks beer regularly, one in twenty drinks wine, and one in thirty drinks spirits. In a large German town a government doctor, studying more than four thousand children, found that 71 per cent. drank beer or wine daily. In a class of seventy-one children between seven and nine years of age, twenty-one had drunk brandy.

MILLIONS OF SCHOOL CHILDREN ARE ALLOWED TO DRINK ALCOHOL

Some years ago careful inquiries were made in England to see whether the same thing was to be found there. It was found that in several schools in London, over 40 per cent. of the children in the primary grades drank alcohol more or less regularly. As far as the inquiry showed, it was probable that at that time there were many thousands of child drinkers in London alone and that perhaps two million school children in England and Wales drank alcohol more or less regularly. Since then, however, strong efforts have been made to teach parents the harm that they were doing their children in giving them wine, beer, or any other form of alcohol to drink.

It is perhaps not to be wondered at that some parents are still ignorant of the harm that alcohol may cause. It is

not very many years since doctors themselves began to realize it. Not very long ago it was generally believed that alcohol had strengthening powers. But the great scientists have taught us that this is not the case, and we now know the truth of the matter.

There is a very clear rule about alcohol, and other substances like it, in the way they act upon the body. It is, first, that the younger and the further from its grown-up state the creature is, the more it is affected by the poison. That, of course, we can understand. The earlier the period of development, the more serious is a wrong step; the further, so to speak, the creature will go out of its right way.

THE BRAIN MORE WONDERFUL THAN ANYTHING ELSE IN THE UNIVERSE

The second point is that alcohol and other substances like it affect the body, whether developing or already grown up, in a certain precise order. Our bodies are made up of many parts, some of which we may look upon as older than others, and those which are older we must also look upon as lower. The backbone, for instance, is very old, for we know it is as old as the fishes; parts of the brain are very old, but we can trace in the brain, quite clearly, newer parts which are higher in their duties and more easily upset. There is, indeed, a part of the brain which is often called the new brain. It is by far the most wonderful thing in the whole universe, so far as we know it. Now the point is that the newest and highest parts of the brain are also the most delicate. They are the most likely to be injured by anything when we are grown up, and if anything interferes with the development of a growing child, these parts are the most certain to suffer. The same is true of injury done by old age or by disease; *the last to come is the first to go*.

"Last to come" has a double meaning, because it applies both to the race to which we belong, and to ourselves as individuals. The parts and powers of the brain that develop last in ourselves, as we grow up, are those that have developed last in the history of the great line to which we belong.

THE GREAT LAW THAT THE LAST TO COME IS THE FIRST TO GO

The rule is that when the individual is damaged in development, or is poi-

soned by anything that acts at all upon the brain, or grows old and begins to go downhill, as we say, that which last came is the first to go. On the other hand, the very oldest part of the brain, such as the part by which we breathe, is the least delicate. It is the first to come and the last to go. Every other part of a man's brain may have been practically destroyed, and he may be quite unconscious from a huge dose of alcohol, but the part of his brain which makes him breathe will hold on to the last; until, perhaps, the alcohol poisons even that, and then he dies.

This law about the different levels of the brain ought to be known by every intelligent person in the world, because it is the greatest discovery ever made in this branch of science. It was made by an Englishman, Dr. Hughlings Jackson, who died only a few years ago.

Alcohol perfectly illustrates Jackson's law in every part of it. When young children are exposed to the effects of alcohol, their development is interfered with most in its highest parts. That is the terrible thing about alcohol, and other substances like it, that they strike at us where we are most human, and interfere less with the least human parts of us. There are some hundreds of thousands of persons in America to-day, of all ages, whose brains and minds have not properly developed. The most moderate figure is about a quarter of a million, but we know that that is far under the real facts. The lives of these persons are worth nothing to themselves and much less than nothing to us.

THE CELLS OF OUR BRAINS THAT CAN NEVER BE REPAIRED

We, of course, have to pay for their keep, and for all sorts of terrible evils, like crime, and drunkenness, and cruelty to children, which flow from the existence of these people. They all illustrate the truth of Jackson's law. The highest, the latest, the most delicate, the most human part of their brains has been injured, but they breathe as well as we do. No power on earth can repair this injury. It is one of the most remarkable facts about the brain, or, indeed, about nerve-cells anywhere, that once destroyed they are destroyed forever. No new nerve-cells can be made beyond those with which we are born, and no damaged nerve-cell ever recovers. Now, alcohol

is very largely responsible for the making, and for the existence, of these unfortunate children and grown-up people; and all of them are so many terrible illustrations of Jackson's law.

Jackson's law applies in just the same way to cases where people of any age take a large enough dose of alcohol to affect their brains. They may do themselves no permanent harm, but while the brain is under the influence of alcohol we find that the last to come is the first to be affected, and to be the most affected. Now, it is very interesting for us to ask ourselves what it is in our brains and minds that is the very highest and latest thing.

THE POWER OF SELF-CONTROL MAKES MAN HIGHER THAN THE ANIMALS

What is it that a child learns last and finds most difficult to learn? What is it that some grown-up people have never learned? What is it that makes the difference between the highest type of man whom we can trust always, and always be sure of, and other people of whom we cannot be so sure? It is not the power to move one's body, certainly, nor is it the power to see and hear, nor yet the power to speak. It is not even the power to think, though people are apt to suppose so until they look into the matter. It is *self-control*. In creatures other than man there is almost no self-control. We may watch them at a zoological garden, year in, year out, and we shall find no signs of it. If we train one of the most intelligent of all animals, such as the dog, it is only fair to say that we find the beginnings of self-control there; but that, of course, is with man's help. The greatest thing in us—apart from love, which is greater in one sense—is the power to say "No;" the power not to yield to this, or that, or the other, because of some consideration which we have in our minds, and which we regard as of higher importance.

Now, it is the mark of savages—by which we mean real savages, not highly educated and cultured people like Indians and Chinese, whose ancestors were civilized thousands of years before ours were—that they have very little self-control. They act quickly, impulsively, as we say. The highest part of the brain is not so well developed in savages as it is in us. In children, self-control is not an easy thing.

WHY CHILDREN CRY AND GROWN-UP PEOPLE DO NOT

When a child is hurt, it cries. Older people may be hurt just as much, but usually they do not cry. The brain has learned how to control the tears. In the same way children will laugh more readily than grown-up people, and often they find it very difficult to keep from laughing at times when it is not at all polite to other people to do so. Now, lack of self-control is the most certain and constant mark of defective-minded people of all kinds, and it is the first and most certain mark of poisoning by alcohol, and other things of that class, that they strike at the most human thing in us; the last to come and the first to go. People who could keep their temper without alcohol lose their temper under its influence; they start laughing or crying, and cannot stop, at things which would not have made them either laugh or cry when they were all right; they do rash things when any one puts the idea into their heads; they lose their caution and their judgment; they say things that they would not usually have said. We commonly suppose that the first effects of alcohol are when the muscles of a man's body are affected. But that is a great mistake. The first effect of poisons of this kind is shown upon the highest parts of the brain, which have nothing to do directly with any muscles. The muscles are directly controlled by the lower part of the brain.

HOW ALCOHOL SPOILS THE HIGHEST POWERS OF MAN

It is only later that the levels of the brain which work the muscles are affected, and always the law of Jackson holds good, and these parts of the brain are affected less than the parts above them. The latest and most delicate movements are affected first. The most human movements, so to speak, are those of the thumb, and these are injured very quickly, as the writing shows, or any kind of delicate movement in which the thumb is concerned. Then the delicate movements of speech are affected, and next the delicate movements by which the two eyes work together. Under the influence of alcohol they work separately, so that the person sees double. Afterwards, the coarser movements, such as those of walking, are affected; but, as we have already learned, the movements of breathing remain to the last.

HOW ALCOHOL DEADENS THE SENSE OF RIGHT AND WRONG

People who drink alcohol lose the sense of right and wrong. They tell long stories about things that never happened, and exaggerate so that you never know when they are speaking the truth. At first this loss of the moral sense is hardly noticeable, but gradually it increases until at last all sense of responsibility and duty is swept away. "The cries of cold and hungry children make no impression on a brain dazed with alcohol, and no emotion of affection or desire to protect is aroused by the cry of a suffering child." Indeed, men under the influence of liquor will often strike or cruelly beat their own little ones. It is a fact well known to workers among the poor that the greatest barrier to their efforts to uplift the people is alcohol. It deadens all higher thought and kills the desire to become neat and cleanly and healthful.

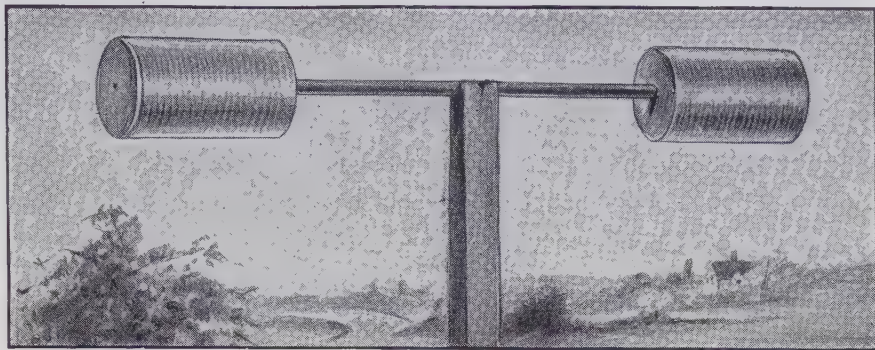
DESTROYING ONE'S OWN LIFE AS AN EFFECT OF ALCOHOL

Alcohol has the most depressing effect upon the brain. The short period of brightness and excitement produced by it soon passes away and is usually followed by a long fit of the "blues." While the body is trying to come back to its normal condition, people sometimes take their own lives in what is termed a spell of temporary insanity. It is the opinion of one doctor that alcohol is to blame for many tragic deaths among young men and women. It is reported that out of two hundred and twenty attempts at suicide, three-fourths of the number were more or less under the influence of liquor.

So long as the effect of the alcohol is in the system, people look at life from an unnatural point of view. They are subject to jealousy, to fits of rage, and usually very quarrelsome. As a consequence, they do all sorts of foolish and wrong things and may even commit crimes from which, when not under its influence, they would shrink with horror.

None of this is very pleasant reading if we think of it as what happens every day to thousands of persons. But just now we must look at it from the point of view of the wonderful history and building of our brains, and of the law of Dr. Jackson, which teaches how the history of the brain tells in its behavior when anything injures it.

THE NEXT STORY OF OUR OWN LIFE IS ON PAGE 5621.



The home-made barometer as it appears when completed and erected for use in the garden.

A BAROMETER MADE AT HOME

THERE is a barometer of an entirely different kind from those that most of us know, that works very well, costs little for material, and can be made by any careful and persevering boy.

First of all take two sheets of stout white paper of good quality, stiff in texture, and of any convenient size. A good size would be twenty inches by thirty inches. Now let us roll up each sheet into a cylinder, and glue the edges in position, so that we have two tubes, or pipes. We next cut out, or ask a carpenter to make for us, four round pieces of wood exactly the right size to fit in at the ends of the cylinders. If there is any difficulty about getting round pieces of wood we may cut these drumheads out of thick cardboard; but let us remember that the cardboard must be very thick indeed. The boards, or drumheads, being quite ready, we fix these in the four ends of the cylinders, and glue the paper to the edges of the boards, so that they are perfectly airtight. There must not be the least opening anywhere for the air to pass.

We now take a pole of any suitable length, an ordinary blind-rod is very suitable for the purpose, and with glue fasten a cylinder to each end, as seen in the picture on this page. We should be careful to see that the pole is fixed exactly in the centre of the round end of each drum, or cylinder.

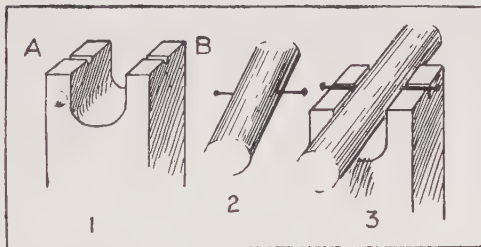
Now let us decide where we are going to fix our home-made barometer. It is best to put it in some position sheltered from the rain, though open to the air—under a veranda outside the house, or under the roof of an open shed. Having selected the

CONTINUED FROM 5354

spot, we erect a post of any suitable height—four or five feet would do admirably, although

the height is not a matter of the least importance. Dig a hole, and insert the post so that it is perfectly upright. Then fill in the hole and press down the earth all round. The next thing we have to do is to shape out a groove in the top of the post, as seen in the first diagram. We can do this with a keyhole saw, and can then smooth the groove with emery-paper. At the places marked A and B in diagram 1 we cut two little grooves crosswise, and polish these very smooth.

The groove at the top of the post is for



1. The grooves at top of the post. 2. Nails in the poles for balancing. 3. How the pole balances on the post.

the pole with the drums to work in. We take the pole, and on each side drive in a pin, these pins being for use as pivots to work in the small grooves A and B. We move the pins until we get them so that the pole will balance on top of the post with the two drums, or cylinders, exactly level. Then we replace the pins with smooth strong French nails, as shown in diagram 2. The pole balances on the post, as in diagram 3. To make our barometer indicate the weather, we bore a hole in one of the wooden ends of one cylinder only. This establishes communication between the outside air and that in the cylinder, while the air in the other cylinder is that which was enclosed in it, and is cut off from outside air. If the outside air is heavier than that in the closed cylinder, the cylinder with the hole will go down, and this indicates fine weather; while if the surrounding air is lighter than in the closed cylinder, the cylinder with the hole will rise, and this foretells wet weather.

THE GAME OF MAKING RHYMES

A VERY good pastime for boys and girls, and for grown-ups, too, as they sit round the table on a wet evening, is to make up two-line rhymes, each taking it in turn to give to the others the word they are to use at the end of the first line, and for which they must find another rhyming word at the end of the second line. It is easy to make up a two-line rhyme, if the word given has many other words rhyming with it. For instance, with the word *then* some such couplet as this may be made :

A little nonsense now and then
Is relished by the wisest men.

The great idea in this game of making rhymes, however, is, when our turn to give a word comes, to pick one that has no rhyme.

There are many such words in the English language, and here are some of them : Alb, breadth, bulb, chimney, coif, depth, doth, eighth, fifth, film, fugue, gulf, hemp, lounge, mouth, mourned, ninth, oblige, orange, of, pint, polka, pork, porringer, prestige, puss, sauce, scarf, silver, sixth, spoil, sylph, tenth, twelfth, plagued, warmth, wasp, wharves, widow, width, window, with, wolf, wolves.

When it is someone else's turn to give a word to which we must find a rhyme, and they give a word like one of these, it is worth knowing that the difficulty may sometimes be overcome by ingenuity. For instance, orange and month have been used in this way :

From the Indus to the Bloreng
Came the rajah in a month,
Eating now and then an orange,
Conning all the day his Grunth.

The Bloreng is a hill near Abergavenny, and the Grunth is the sacred book of the Sikhs. Here are two other attempts with month.

"You can't," says Tom to lispng Will,
"Find any rhyme for month."
"A great mithtake," was Will's reply ;
"I'll find a rhyme at wunth."

How many weeks in a month ?
Four, as the swift moon runn'th.

Another rhyme to orange is the following :

I gave my darling child a lemon,
That lately grew its fragrant stem on ;
And next, to give her pleasure more range,
I offered her a juicy orange.
And nuts, she cracked them in a door-
hinge.

Porringer is a difficult word to rhyme, but the difficulty has been met in these ways :

The Second James a daughter had,
Too fine to lick a porringer ;
He sought her out a noble lad,
And gave the Prince of Orange her.

When the nations doubt our power to fight,
We smile at every foreign jeer,
And with untroubled appetite
Still empty plate and porringer.

Portugal is not an easy word, but :

There was a young lady of Portugal
Whose turn was decidedly nautical !

A rhyme can sometimes be made by splitting a word at the end of a line, as in the following example, which gives a rhyme to polka :

Our Christmas tree produced a doll ca-
Parisoned to dance a polka.

Window and widow have been rhymed.

Bold Robin Hood, that archer good,
Shot down fat buck and thin doe,
Rough storms withstood in thick greenwood,
Nor cared for door or window.

Since of this suit I now am rid oh !
Ne'er again I'll lodge with a widow.

When difficult words are given for rhyming, it always causes surprise and adds greatly to the interest of the pastime if we can overcome the difficulty in some ingenious way like those given.

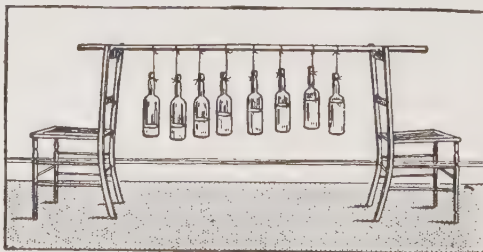
A MUSICAL INSTRUMENT FROM OLD BOTTLES

AN amusing and clever musical instrument may be made from a number of old bottles, such as we buy lime-juice or vinegar in. Even medicine bottles will do, but the bottles should be all the same size.

Having collected our bottles, we take an ordinary broomstick and rest this on the backs of two chairs as shown in the picture. Then we tie the bottles to this stick, so that they hang loosely and not too close together. Now comes the work of tuning up, and this we may do by pouring water into the bottles, a different quantity into each, putting more water for a low note and less for a high. To get the note of each, we tap it with a stick—the edge of a boxwood rule is a very good thing for this purpose. With patience and perseverance and a little ordinary care and skill, we shall at last have our

bottles all tuned and ready for use, and we can now play the curious instrument by striking the bottles with the edge of the rule.

Of course the bottles need to be strong, or the striking would break them, but we need not strike very hard. It will be found that simple tunes can be played on the bottle-bells, and after some practice we can take two sticks and thus play quicker tunes. It is, of course, essential that the bottles should be hung at such a distance that they do not knock against each other when struck with a rule or stick. Much fun can be obtained from this home-made instrument, which should only be used out of doors, in case the bottles break and the water runs out on the ground, although there is no need, if care be exercised, to have any such accident.



MUSICAL BELLS MADE FROM OLD BOTTLES

A DAINTY AFTERNOON TEA-CLOTH

UNTIL we have tried it, we can have no idea what a pretty afternoon tea-cloth can be

made of four linen handkerchiefs joined together by strips of lace. Nothing could be simpler, or easier to make, and we shall find that this is the best way to set about the work. Buy four plain linen hemstitched pocket-handkerchiefs of equal size, and lay them side by side, in two rows, to form a square, leaving a

space of about $1\frac{1}{2}$ inches between them, to be filled in by lace insertion, as shown in picture 2.

We must measure carefully the quantity required, because the size of handkerchiefs varies considerably. The insertion should be joined to the handkerchiefs by means of *whipping*, or tiny over-and-over stitches, which, in case we have forgotten, are worked as shown in picture 1.

We lay the edge of the insertion against the edge of the handkerchief, working the two together in this way, but being careful not to pull the stitches too tight. They should be just tight enough to hold them together. The next thing to be done is to sew on all round the cloth a frill of lace to match the pattern of the insertion, which adds in no slight degree to the general effect of the cloth.

CUTTING AN APPLE INSIDE WITHOUT PEELING IT

TO cut the inside of an apple in half without cutting the peel may seem impossible, but it is not really so; and if we follow these directions we shall be able to perform this puzzling feat. Take a good, crisp, sound apple of moderate size, and a needle with thin but strong thread, such as is found in any home.

Now insert the needle at the point A, and push it through the apple to the point B, pulling a good length of thread through, but leaving 10 or 12 inches hanging out at A. Now insert the needle again at B, and push through to C, drawing the thread well through; then thread from C to D, and so on right round the apple and back to A, forming in the course a decagon, as shown in the picture. We now have the two ends of the thread hanging out at A, and if we pull these gently but firmly downwards we shall, with the thread that forms the decagon, round the inside of the apple, be able to cut the inside of the apple clean in two without injuring the peel. The thread is, of course, pulled right out at the bottom, A.

This feat is capable of considerable development. Having cut the apple in half in the manner indicated, we can again thread the

This lace should be whipped up and then joined to the cloth. We must make a tiny

hem of the rough edge of the lace, whip it, and draw up the cotton until we have got the lace to the right fullness, remembering that if it is too full the effect is not pretty.

The gathered frill should be joined to the cloth, just in the same way as we joined the insertion. It is

important, of course, that the lace should be put on quite evenly, and the only way to be sure of doing this is to divide the

length into four parts, which should be marked with pins, and, later, when the whipping is done, should be pinned to the four corners of the cloth.

The insertion will need to be carefully joined to the lace where the two meet, at the places marked A A in picture 2. To make it quite firm, the insertion should be finished off with a tiny hem, to which the lace can be afterwards sewn. If something more elaborate is wanted, little embroidered handkerchiefs could be used instead of the plainer ones shown in the picture. Plain linen

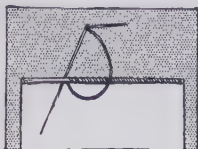
handkerchiefs cost about 20c. each, and the embroidered ones a few cents more; while for the lace we can pay almost any price we choose.

apple all round in another direction, and cut it into quarters, and then in still another direction, dividing it into smaller pieces.

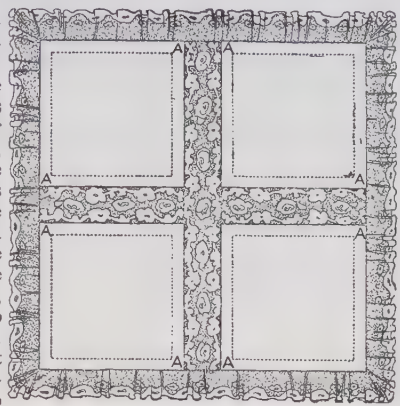
Much fun is to be had from this feat, for we may give a friend an apple thus divided, with the request that he will peel it for us. It is very amusing to watch the expression on his

face when, after peeling the apple, he finds that the inside is cut up. Any boy can perform this feat after a little practice, but we must be careful to choose a sound apple, and also a strong thread that will not break when we pull the ends to cut the apple. Of course, a very thick thread should not be used, or the places where the needle is inserted would be too conspicuous. On the other hand, with a thin thread of sufficient strength, the holes made by the needle and thread need not be visible, or, at any rate, not visible except upon a very careful examination.

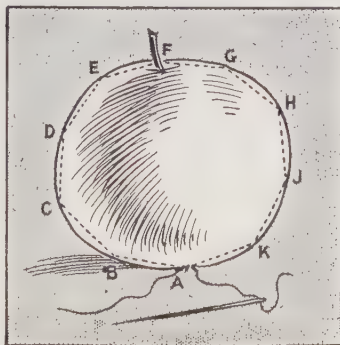
We should not choose a large apple until we have had considerable practice with those of smaller size, as the larger the apple the more difficult it is to pull the thread through without breaking it and without making a rather ragged mark at the bottom of the apple.



1. The whipping stitch.



2. The handkerchief tea-cloth.



HOW TO CUT THE APPLE

A CARD THAT HELPS US TO MAKE DESIGNS

ON this page we see a square with a black line running from each corner towards the centre, and contained in this square are four designs—one a circle, another shaped something like a leaf, the third is like a ?, and the fourth is a double curve, something like a printed S flattened out nearly straight. In addition to these four figures there are eight stars dotted about at intervals. From this simple square we can make a great number of

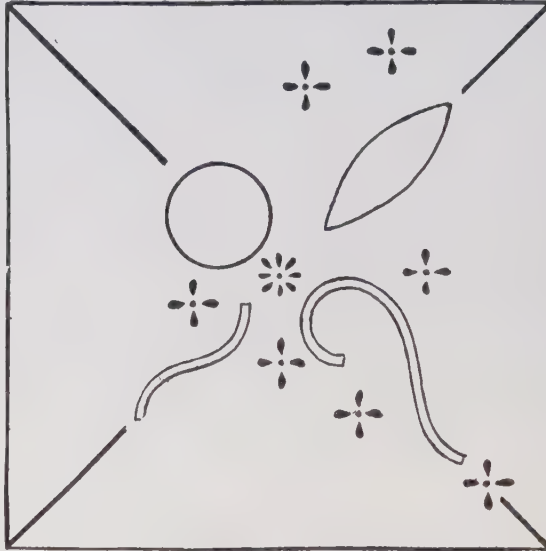
different designs, some of which are very complicated. We must take an exact tracing of this square, and cut out a similar design in cardboard. This will save us from spoiling our book. Having cut out the square in cardboard, we place it upon a sheet of white paper, and run a pin through the black dot in the centre of a little star—any star will do. We must be very particular to see that the pin holds firmly, otherwise our design will be spoiled. We shall now begin to make our design, using, let us say, the circle. We take a soft lead pencil that has been sharpened to a nice point, and make a mark on the white paper opposite the corner of the square, the line from which points to the circle.

Now we take our pencil, and, beginning on the edge of the circle nearest the centre of the square, we draw round and round the circle continuously again and again, but as we are drawing we keep on gradually and slowly shifting the square card round a little to the right.

rate at which we move the square card round as we are drawing the circles. If we want the lines very close we must shift the square slowly, and if we prefer them wide apart we must move the square quickly.

The important thing is to see that we move the square at the same pace throughout. If this be not done, we shall get an irregular design instead of the neat and regular design we expect. When we have practised

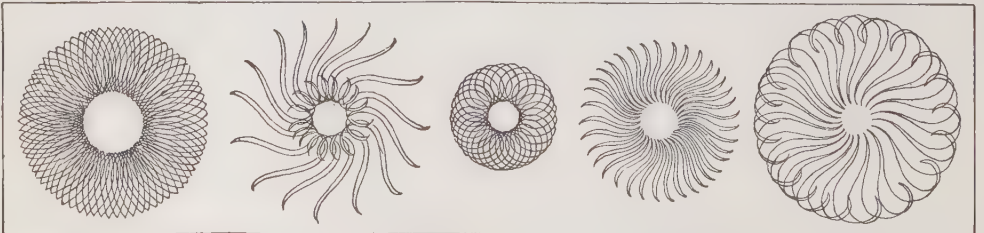
with the circle we might try the leaf design, drawing our pencil round and round as we did in the circle. In making designs from the other two figures the pencil must be run continuously from one end of the figure to the other, backwards and forwards, along the whole length of the curve or slit. On this page we see a few of the simpler designs, but when we become more expert we can use two, or even more, of the figures in making one design, thereby getting very beautiful and intricate patterns. The designs will be of different



THE GEOMETRICAL DRAWING CARD

sizes, according to which star it is that we place the pin through as a centre.

There are several things we must not overlook. To begin with, we should always make the pencil-mark opposite one corner of the square, so that we know exactly when the card has been right round on the pin. If this is omitted, we shall probably overrun the starting-point, and spoil the design. Much, too, depends upon the pin remaining upright and immovable, for if it shifts we shall spoil the



SOME OF THE DESIGNS THAT CAN BE MADE WITH THE GEOMETRICAL DRAWING CARD

We keep on drawing round and round the circle, and at the same time moving the card slowly and evenly round at the same pace until the corner comes back to the spot from which it started. If we now remove the card, we shall find on the paper a circular design similar to the middle one shown in the set of designs in the second picture. Whether the lines are close or wide apart depends upon the

regularity of the pattern. Above all, we must remember that the whole beauty of the picture we are making depends upon the uniform rate at which we move the square and the pencil while drawing.

The designs shown in the second picture are only a few of the beautiful patterns that can be made with this little device, but they show the possibilities of the geometrical drawing card.

MAKING SPINNING PICTURES

ANY boy or girl can easily make for himself or herself a series of pictures from which a good deal of entertainment can be derived. Cut out a piece of cardboard the exact size

a piece of thin string or a piece of thread as seen in the small picture in the middle of the page. That picture, of course, does not represent the size of the card, but only the

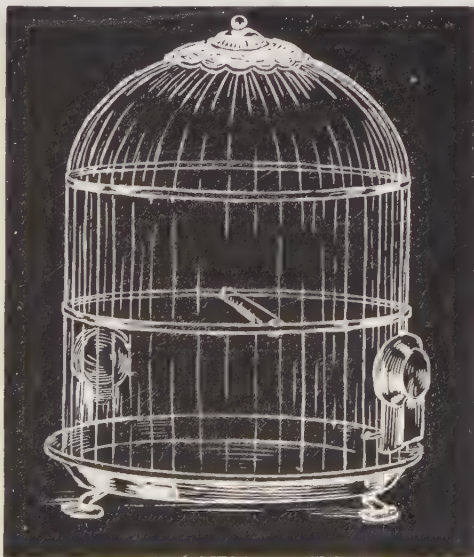


of one of the black pictures on this page. Upon one side of it trace the fish seen in the top picture on the left, keeping it in the exact position on the card as shown in the picture and making all the rest of the card black; on the back of the card trace the grill shown exactly as it is in the top picture on the right side. Now make two pinholes in the card, and fix to each side of the picture



method of fixing the string or thread. Then twirl the string between the fingers and thumbs and the card will spin round rapidly, making the two pictures blend into one so that the fish will seem to be lying on the grill.

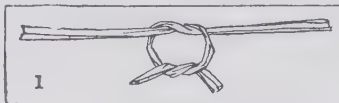
The lower pair of pictures, showing the parrot and the cage, can be made in the same way. When the card is spun, the parrot will seem to be inside the cage.



MAKING A BASKET OF RAFFIA WORK

RAFFIA is another name for bass, which we use in the garden for tying up plants. It hangs in a familiar yellow bunch in the greenhouse, and we all know it quite well. Here we are going to learn how to make a basket-bag with it.

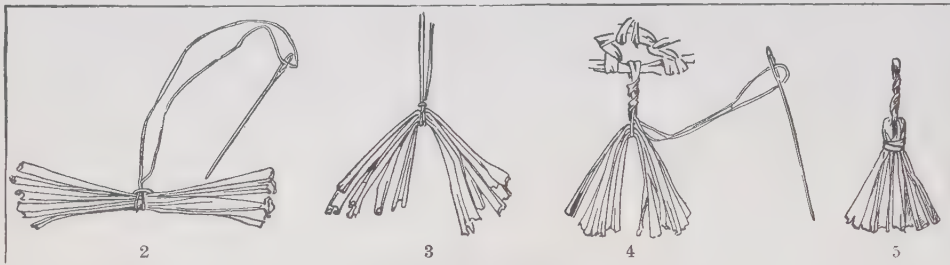
There are two kinds of this material, one a little coarser in texture than the other. This is really the bass, and it comes from the bark of the lime-tree; while the raffia, which is finer, is made from a palm grown in Madagascar. Specially prepared raffia may be had at all good fancy-shops in large or small hanks. As it can never be got in very long pieces, frequent joins are necessary, and the simplest way to join it is to make an ordinary knot and cut the ends off neatly—but not too closely or it will come undone again—for we are going to use raffia like wool, and work it into a basket with a crochet-hook, afterwards plaiting a handle, and finally decorating it with small tassels. When we get our bundle of raffia we undo it and shake it out, then we select about forty of



1 HOW TO JOIN THE RAFFIA

To begin our bag, we make 20 chain stitches; return, making one treble into each alternate chain, missing the chain in between, but making one chain between the trebles. The next row is made of one double crochet into the hole formed between the two trebles, and one chain in between each double crochet, so that there will be 10 chain and 10 double crochets in each row. This makes the body of our basket, and is continued backward and forward for 22 rows. The 23rd row is the same as the 2nd—a line of trebles and chain. We must adjust with our fingers, and straighten out our work if necessary, as we go along. We finish off in the usual way, and press our strip of work with a warm iron.

Any projecting "ends" are now snipped off with the scissors, and we proceed to make a bag of our strip by folding it in half and joining up the two sides. To do this we take a darning-needle with a big eye, and thread it with a *thin* strand of raffia, and sew the sides together with "over-and-over" stitches.



2 3 4 5 HOW A RAFFIA TASSEL IS MADE

the nicest and longest strands, having as nearly as possible an equal thickness. There are always one or two unsatisfactory strands in every bundle. Those with a hard, green edge are not nice to work with, for they split as we twist them round the crochet-hook. We knot our strands of raffia together, cutting away any thin, straggling ends, and winding it round a postcard as we join it.

The knot to use is shown in picture 1. We tighten it by pulling both ends and both strands from either side together, and then pinch the ends back along the strand with the fingers to make them lie flat. It is best to leave about an inch, and if the ends do not "work in," we can cut them off from our basket afterwards. This is a pleasanter task than it sounds, as the raffia has a very fresh, hay-like smell, which comes out as we handle it.

We must use a bone crochet-hook of medium size, and the secret of success is to work very loosely. Each loop must be sufficiently large for the next one to be pulled through easily.

If neatly done, the join will hardly show. The four tassels ornamenting the bottom of our bag are made of six or seven stout strands three inches long. We tie them across the

centre, as shown in picture 3, with a double strip of fine raffia, threaded through a needle. We must pull it tight, and pinch the two ends together, as shown in picture 4. But before we quite finish the tassel, or give it its little "waist," we attach it to the bottom of the basket by passing the needle through a double stitch, drawing the tassel nearly up to the basket, leaving a quarter of an inch of raffia, round which we wind our thread. We insert the needle in the tassel again, and come out just low enough to make the "waist," as shown in picture 4. A double twist round the raffia will do for this, and then we make a knot to keep the bind firm by mak-



THE BAG COMPLETE

ing a buttonhole stitch into the bind. We pull it tight, and cut off our thread, leaving the end as long as the tassel. We do not cut it off short, because raffia is so springy that

it might come undone. There are four tassels, and each one is, of course, made and fixed in the same way.

Now for the handle. We take six strands of stout raffia, thirteen inches long, and plait them together in twos—just as we plait our hair—tying the ends for the time being with a piece of cotton to keep them together. To fix the handle to the basket, we undo one end of our plait for about one and a half inches, take three strands, and thread them between a treble at the side of the top of the basket. We pull them all together again, and join them to the other three strands with a bind, which

is made by winding a thin thread round and round, as we have learnt to do for the tassels. For these two tassels we shall need to go round several times, and must finish off with *two* knot stitches this time, for the handle has to bear a greater strain than the tassels on the bottom. We fray out the remaining end of the plait which forms the tassel, and cut off any uneven ends, fix the other side of the handle in just the same way, and our bag is finished.

If the raffia is hard when we buy it, it can be plunged into hot water and left until cold; removed, shaken, and used when dry. It will then have become quite soft and pliable.

THE GAME OF WHAT IS IT

SOME FAMILIAR THINGS THAT WE ALL KNOW

A NUMBER of well-known things are described on this page, and, after reading each description, we should try to guess what the particular thing that is referred to is. The correct answers are given in the next part of Things to Make and Things to Do.

1. Here is a hard, dull little bit of something that looks as if it had come out of the earth. No wonder its name means "foam," for it is so light that once it floated on the top of a hot, vaporous stream in an island of the Mediterranean. After the stream had cooled, someone picked up the foam, thinking that it would be useful for scraping paint off wood or for taking ink off fingers, or that it might be powdered and made into soap.

2. Look at this dainty, fragile little object on the window-sill, with its cool feel, soft as a feather's. It is not really white. If we look close, we see that it is transparent, with six delicate arms. Perhaps we can see only four. Then two must have been knocked off during a long journey, when its companions jostled it as they all tried to get here first. There! It can't stand our hot hands, and has vanished, leaving a wet spot.

3. Ages, perhaps 50,000 years ago, millions and millions of tiny creatures lived on the surface of the sea. As they were soft, they found it necessary to make armor for themselves as a protection against the creatures that gobbled them up, so they took lime out of the water and made themselves hard coats. When they died, their little bodies sank down to the bottom of the sea in such numbers as to bury up the bodies of fish. The descendants of these tiny creatures are doing just the same thing in the Atlantic now, and what do you think their coats, pressed together, make?

4. "Thud—thud—thud!" goes a wonderful machine, which seems to work all by itself. It is very busy pumping, and its labour must be most important, for it goes on for years and years, not ceasing for a minute's rest. It is made in two halves, each of which is in two divisions, opening into one another by valves. Can you tell what it is?

5. Suppose we can shrink up much smaller than Alice did in Wonderland, and swim inside the hole in this brown thing from which a spurt of water has ceased to pour, and go down the passage. We are going against the stream, and, as we proceed, the passage narrows. There are turnings this way and that, and strange little jelly-like creatures live in nooks along the sides of them, and whip us back with their long arms, for they say we have come the wrong way, and the whole colony is wanting its dinner. So we drift out of the passage again. Every day we handle a similar dwelling-place of these small creatures. What do we call it?

6. There is something which can kill a man or a tree, cure some kinds of disease, boil water, propel a vehicle, destroy a building, give us light, or carry messages for us. We can store it in our bodies, too, and it is even in the tiniest atoms. What is it?

7. One day, by mistake, a little grain of sand drifted inside the shell of a creature living at the bottom of the sea. No one likes to swallow grit, and this animal did not want the sand; but, being unable to get rid of it, it had to make a fluid to cover the hard, sharp grain of sand and prevent it from hurting. Then it made more and more coverings, until no one would have thought that this beautiful, shining, smooth thing was formerly a grain of sand. What is it?

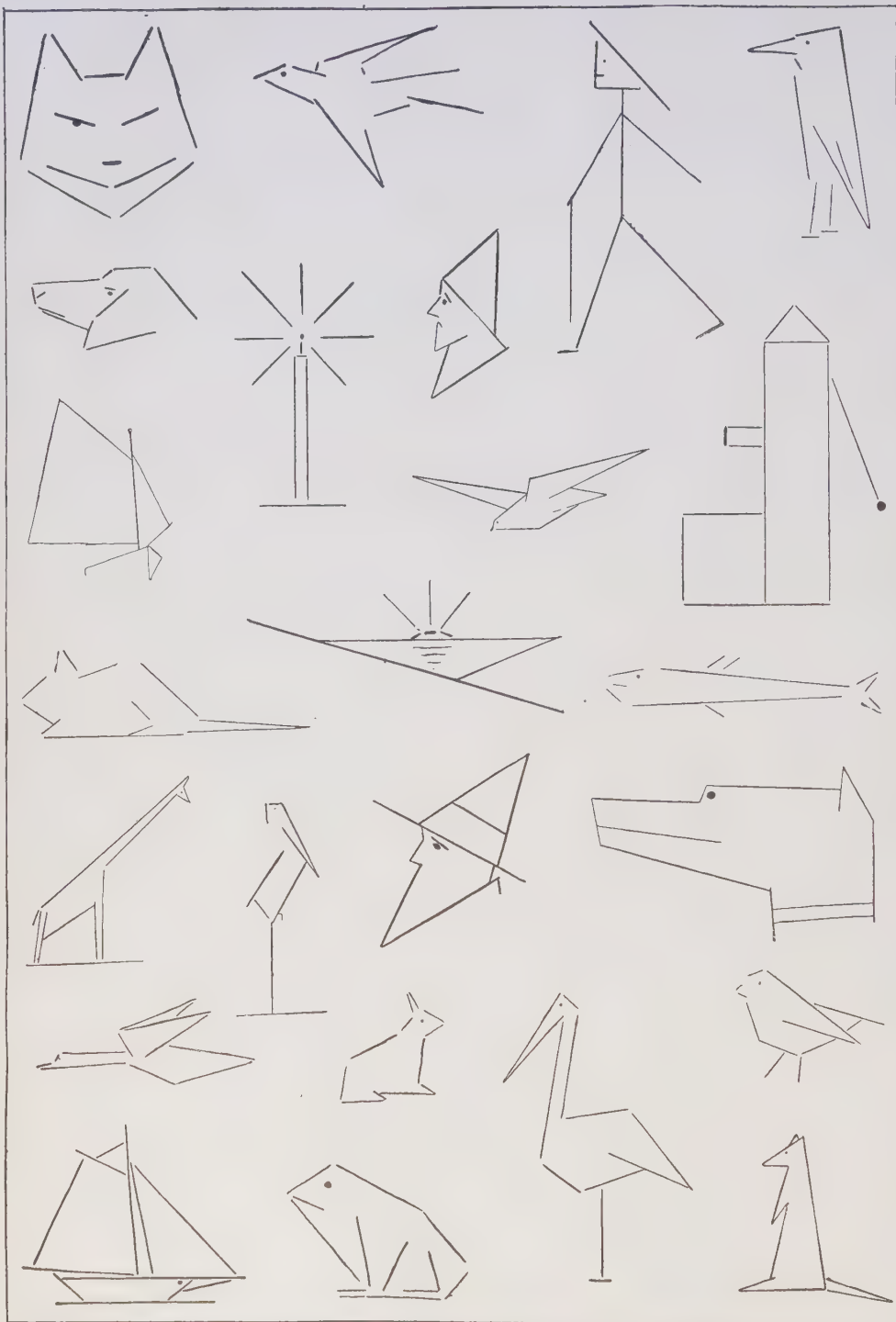
TWENTY-FIVE WAYS OF SAYING THE SAME THING

THE following line from Gray's *Elegy* is probably unique, in that it can be transposed in twenty-five different ways, and yet each time express practically the same thought:

The ploughman homeward plods his weary way
The weary ploughman plods his homeward way
The ploughman, weary, plods his homeward way
His homeward way the weary ploughman plods
His homeward way the ploughman, weary, plods
The weary ploughman homeward plods his way
The ploughman, weary, homeward plods his way
His way the weary ploughman homeward plods
His way the ploughman, weary, homeward plods
His way the ploughman homeward, weary, plods

His homeward weary way the ploughman plods
Weary, the ploughman homeward plods his way
Weary, the ploughman plods his homeward way
Homeward his way the weary ploughman plods
Homeward his way the ploughman, weary, plods
Homeward his weary way the ploughman plods
The ploughman homeward, weary, plods his way
His weary way the ploughman homeward plods
His weary way homeward the ploughman plods
Homeward the ploughman plods his weary way
Homeward the weary ploughman plods his way
The ploughman, weary, his homeward way plods
The ploughman plods his weary homeward way
Weary, the ploughman his homeward way plods
Weary, his homeward way the ploughman plods

HOW TO DRAW A PICTURE WITH 12 LINES AND A DOT



These clever pictures were all drawn by boys and girls, and are made up of twelve straight lines and one dot, neither more nor less. It is more difficult to draw anything if we are confined to a few lines than if we put in as many as we like. Let us see if we can make drawings with twelve lines and a dot as good as these.

THE PUZZLES OF THE WIZARD KING

On these pages are a number of problems and puzzles of various kinds. The explanation of the puzzles that are given here, and of those that will appear in future pages of the Wizard King, is as follows: In a hidden-word puzzle the name is made up of the parts of two or more words. Example: "When ill *I lie* so comfortably in this cool, pleasant room!" The letters in italics show hidden flowers, lilies. In a *double acrostic* we write down under one another the names of the different things mentioned, and the initial letters read down from top to bottom, and the final letters read in the same way give the names of the persons or things we have to discover. In a *single acrostic* only the initial letters spell anything. In a *square word* the words forming the square read the same downwards and across. *Beheaded names* almost explain themselves. Tears, ears, is an example. In a *riddle-me-ree* my first, second, and so on, are letters. A *charade* is similar to a riddle-me-ree, only in this case my first, second, and so on, are parts of a word, not merely letters. For example, my first is a professor *don*; my second opens a door, *key*; my whole is an animal, *donkey*. *Transformations* and *anagrams* are almost the same thing. An anagram is the rearrangement of the letters of a word or words, to form a new word or words which have some relation to the old ones. The following is an example of *quaint arithmetic*: What number, from which one is taken, is even? S—even. The solutions of the puzzles appear in the next Things to Make and Do.

I. THE UNKNOWN QUOTATION

One day there came to the palace of one of the Eastern princes a poor man who was very fond of poetry. He had with him a sheet of parchment, and on it was the curious diagram shown here. The parchment had been sold to him by an old bookseller, who told him the following particulars about it:

"At each point in the diagram, or wheel, where lines cross, you must place a letter.

When the proper 25 letters have been placed, the spokes will read as follows, beginning in each instance with the same letter at the centre.

1.—A Greek letter. 2.—A short poem. 3.—A bird of Egypt. 4.—A metal. 5.—An image. 6.—A goddess of the ancient Egyptians. 7.—A flower. 8.—Is never found where there is no water.

"Around the tire is a quotation from an English poet, with his name. The middle circle is a sentence encouraging you to solve the problem. The innermost circle is another sentence of further encouragement."

The prince, who, as it so happened, knew most of the world's poets off by heart, solved the problem, and sent the poor man on his way rejoicing. What was the solution?

2. THE MYSTERIOUS INSCRIPTION

The following is the translation of an Arabic inscription discovered in the temple of Persepolis. It can be read in such a way as to form four moral and useful maxims.

say	know	says	knows	says	knows
spend	have	spends	has	spends	has
tell	hear	tells	hears	tells	hears
covet	see	covets	sees	wants	sees

Do	all	for he	all	more
not	you	who	he	than
			often	he

3. HIDDEN FISH

Be calmer, O aching heart! I have seen dogs push a door open. Let's have a good frolic, O do, dear father! Our teacher rings the bell five minutes too soon. Decatur bothered the Algerines more than once. Place the crowbar below the log in order to raise it.

4. SQUARE WORD

Without sight; enamored; white and hard and polished; a delicate fibre in the system; one who dries anything.

5. RIDDLE IN RHYME

I am, as you'll agree with me,
The funniest thing in land or sea.
My mouth is bigger than my head,
I always stay within my bed.
Yet, funnier still, I often rise.
Now answer *that*, you solvers wise!
Yet though in bed I always stop,
You'll see me racing neck and crop
Through the valley, down the hill;
In fact, I'm very rarely still.
This condition answer me,
This funniest thing in land or sea.

6. DOUBLE CHARADE

Two riddles at once are by me now rehearsed;
The first of my first yields the first of my second;
'Twixt the next of my second and next of my first,
There's often a miss—so sages have reckoned.
Of my first and my second the wholes may be seen
Uncommonly common on a common, I ween.

7. ROB ROY'S PROBLEM

Many of us have read the fascinating story of Rob Roy, by Sir Walter Scott. Rob Roy's real name was Robert Macgregor; and during his leisure moments, when he was not fighting, he was very fond of inventing puzzles. The printed signature below shows one of his little problems.

ROB ROY

Rob Roy wrote beneath his own original little sketch:

"Start at any point you like, and trace my name, as it is given above, without removing the pen from the paper, crossing a line, or going over any of the lines twice."

How is Rob Roy's problem solved?

8. MISSING LETTERS

B-t-e-n-h-d-r-a-d-h-d-y-i-h,
W-e-t-e-i-h-i-b-g-n-i-g-o-o-e,
C-m-s-p-u-e-n-h-d-y'-o-c-p-t-o-s,
T-a-i-k-o-n-s-h-c-i-d-e-s-o-r.

THINGS TO MAKE AND THINGS TO DO

9. BEHEADED NAME

Autumn o'er the earth has strewed
 Me far and wide;
 Everywhere my form is viewed,
 Sere, and dried.
 Now behead, I then pertain
 To all house-tops;
 Oft the welcome, welcome rain,
 From me drops.
 Behead again, the nuns at prayer
 Us oft repeat.
 Transpose—from woe and care
 Relief entreat.

10. THE SQUIRREL AND THE CORN

A box has nine ears of corn in it. A squirrel removes three ears a day, and takes nine days to carry all out. Explain this.

11. THE WIZARD'S ALPHABET

Which letter is a measure?
 Which is an industrious insect?
 Which letter is a drink?
 Which one is an exclamation?
 Which is a river in Scotland?
 Which is a bird?
 Which is a vegetable?
 Which is everlasting?

12. ANAGRAMS FROM SHAKESPEARE

- (a) Scour in a' dust-tin.
- (b) Alike, a slim, raw sheep.
- (c) Close ruin.
- (d) Tap oracle.
- (e) Free such lost dogs.
- (f) Fan on hot jug.
- (g) Scour a lion.
- (h) A charm'd one.

CAN YOU FIND YOUR WAY INTO THIS MAZE?

IN the centre of this maze is a goat that has strayed in from the outside and does not know how to escape. It looks very simple





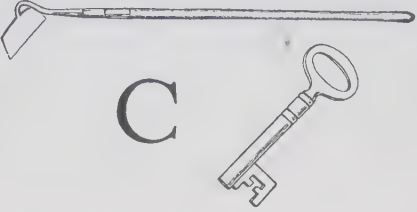


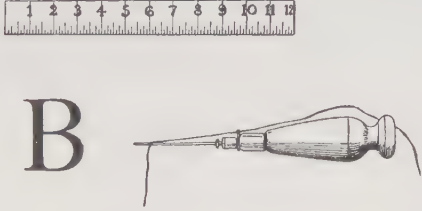



goat. Do not spoil this page of the book, but take a piece of tracing or tissue paper, or any other transparent paper, and trace off the lines



to enter by the opening at the bottom of the maze and to reach the centre, but it is not so easy as it looks. Let us see if we can reach the

of the maze. Then, starting at the opening at the bottom, try with a pencil or point to trace your way to the goat without crossing any lines.

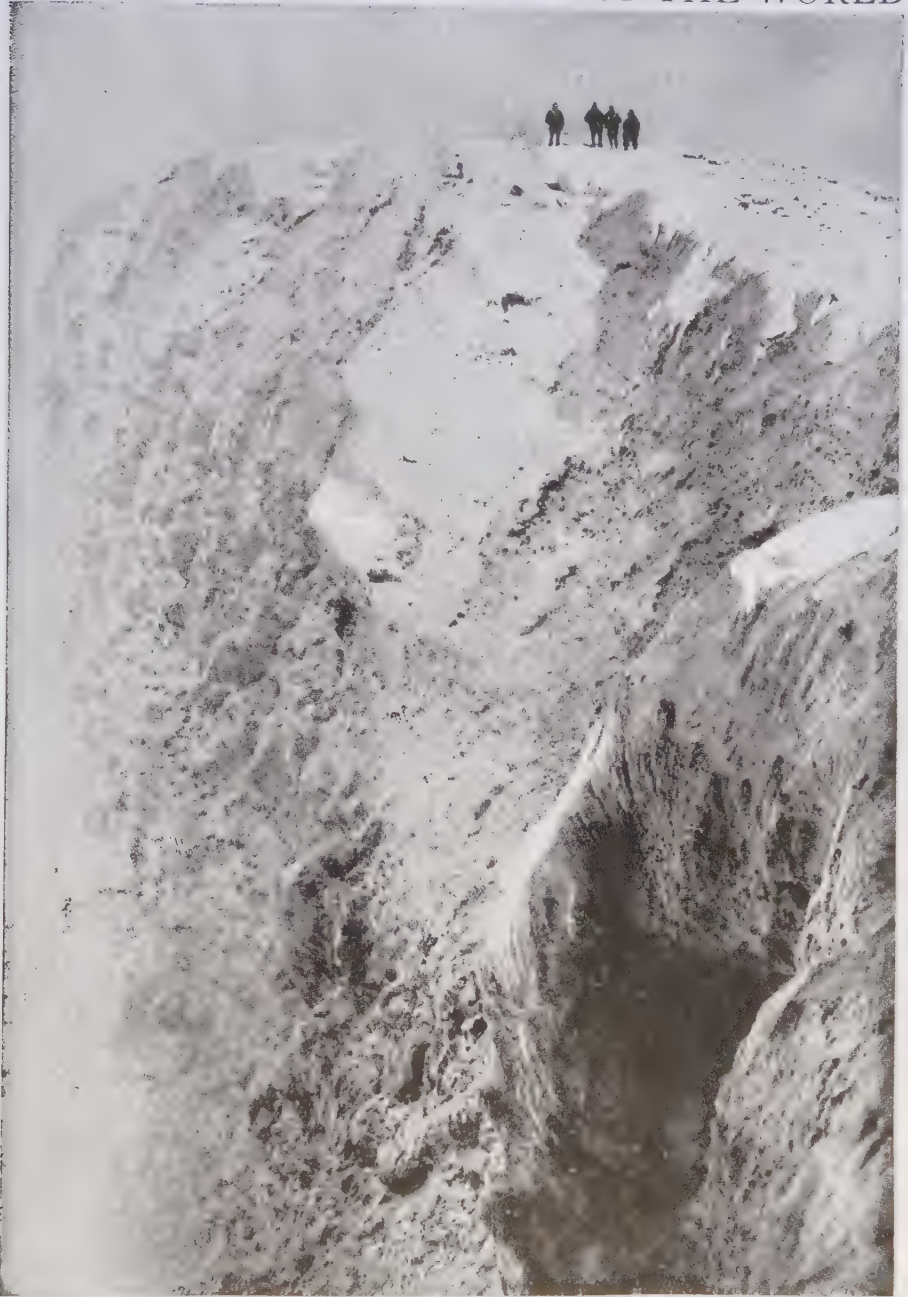
WHAT GAMES DO THESE PICTURES REPRESENT?

 <p>THE</p>  <p>1</p>	 <p>K</p> <p>2</p>
 <p>3</p>	 <p>C</p> <p>4</p>
 <p>5</p>	 <p>6</p>
 <p>B</p> <p>7</p>	 <p>8</p>
 <p>9</p>	 <p>10</p>

The names of the objects and scenes shown in these pictures, together with the letters given, spell correctly the names of ten games that boys and girls play. Examine the pictures and see how many of these names you can build up in the manner indicated. The answers are given in next Things to Make and Things to Do.

THE NEXT THINGS TO MAKE AND DO BEGIN ON PAGE 5517.

LOOKING INTO THE BOTTOM OF THE WORLD



Until the dawn of the twentieth century the regions that lie around the South Pole were almost unknown to man. Of late years, however, several expeditions have fought their way into this ice-bound and romantic region at the bottom of the world. January 9, 1909, a party of Englishmen, under Lieutenant Shackleton, succeeded in reaching a spot 111 miles from the Pole. In the course of this expedition the great volcano, Mount Erebus, was ascended for the first time, and here we have a very wonderful picture showing the little group of intrepid and determined men standing on the edge of the crater and looking down into the interior of the earth. The great crater is nine hundred feet deep and half a mile across. The photograph was taken from the lower part of the crater's edge, and on the left steam is seen rising from the depths below. This picture is from Lieutenant Shackleton's wonderful account of his expedition. published under the title of "The Heart of the Antarctic."

The Book of ALL COUNTRIES



The regions round the Poles, showing that the North has been much more explored than the South.

THE SEARCH FOR THE POLES

MAN has always shown a strong desire to find out everything about the world on which he lives. As we look at a globe or a map, and think over the stories of the countries, we realize how gradually the oceans and continents—nay, the very shape of the world—came into view for mankind. Bit by bit the surface of the earth has become known. A man braver than the rest has gone out into the unknown and added a little to knowledge.

Much has been done in exploring the hidden parts of the earth, but there are still secrets to find out in the vast regions at the extreme north and south of our world. We say, "As wide as the Poles apart," when we mean to express great distance, for the Poles are the ends of the imaginary line running through the earth, on which it is said to turn on its everlasting journey round the sun—as a wheel turns on its axle.

We must gather together all that we know of snow and ice, of intense cold, of the difficulties of crossing the snow-fields and glaciers of the Alps and Himalayas, the mountains of Tibet and Alaska, and we must also

CONTINUED FROM 5371



recall the deep quiet and loneliness of these parts of the world. Then, putting all these snowy regions of the world together, we shall begin to have some idea of the icy caps that surround the Poles, each larger in size than the continent of Europe.

Now, if we place a globe or map of the world before us, so that we look directly down on these polar regions in turn, we shall see that there is a very great difference between them. We shall see at a glance that, on the north, the great continents of Eurasia and America stretch far up within the limits of the arctic circle, and that there are waterways passing each side of the immense island of Greenland, and by the Bering Strait into a huge polar sea.

THE CENTURIES IN WHICH THE SOUTHERN WORLD WAS LOST

When we turn to the south, we see a great difference. The lands of the southern half of the world, New Zealand, Australia, Africa, and South America, all point to the antarctic regions, but are separated from them by thousands of miles of open sea, which for ever surges round a vast polar continent, covered deep with ice,

like Greenland. Few men have tried to find out much about it.

Not so the north polar cap. Nations particularly fond of daring adventure, such as the Norsemen, the Dutch, the British, all living within easy reach of a gate in the icy wall that surrounds it, early began to make their way thither. Perhaps they were partly attracted by the wish to find out whence came the huge bergs, or mountains of ice, floating down from the north. And the immense whales, too, were eagerly sought for in the icy seas of the North.

HOW KING ALFRED LISTENED TO THE STORY OF FIRST POLAR EXPLORER

A thousand years ago, Alfred the Great listened to the story of the first recorded arctic expedition. Ohthere, who dwelt "northmost of all the Norsemen," had so strongly within his heart the passion of discovery that he could not sleep for thinking of what the unknown North might hold. So he gladly left his herds of 600 reindeer and his other riches, and pushed on north and east till he found the White Sea and the Dwina River and the North Cape. On his return he told the king of the wonders he had seen. The king must have doubted the description of the huge, fat walruses and their "noble teeth." But Ohthere, to prove the truth of his story, held out the walrus-teeth he had brought as a present to the Saxon king, and Alfred was convinced and wrote down the story Ohthere had told him.

Ohthere spoke of the natives he had found so unfriendly near the mouth of the Dwina. Unpromising as is the country stretching up to the frozen polar sea, there were then, and are now, men, women, and children who live scattered over the wide and dreary expanse, belonging to a very old family of nations—poor relations, we may call them, of the Chinese. Most of them are Eskimos, or Innuits, and these are found chiefly round about the shores of North America and the islands. Other tribes of the same family live on the desolate tundras of Asia, which are frozen hard during the winter, and form a swampy morass during the summer.

THE HARD LIVES OF THE PEOPLE OF THE FROZEN NORTH

It is difficult for us to imagine their life. No fruits, no vegetables, a little moss; but no trees, no cornfields, no

towns, no way of getting about except in small boats made of skins, or on sledges drawn by dogs or reindeer. For food, clothing, oil to give light and heat, they depend on the seals, walruses, bears, whales, foxes, and fish that share the arctic solitudes with them.

In winter, when the sun does not rise for months, they live in round houses, like basins upside down, built of blocks of frozen snow, which thaw as summer appears. And such a summer! For the sun, once up, stays up later and later till he does not go to bed at all. Then they take to tents or shelters of earth or stone.

In a gallery of the Museum of Natural History in New York, we can see many things that help us to enter into the life of the most northerly people of the world. There are their fur dresses; the women wear trousers as well as the men, and the little girl's suit is particularly interesting, as well as the water-proofs, boots, and mittens.

The canoes—the small one is, perhaps, a woman's—we can fancy being paddled in the dark water. The difficulties of the chase are brought home to us as we look closely at the spears and darts to kill seals and birds, at the fish-hooks and harpoons, at the whistles for luring the deer, at the bows and arrows, and at the ice-scratchers to attract the seals.

THE MEN WHO PUSHED INTO THE UNKNOWN NORTH

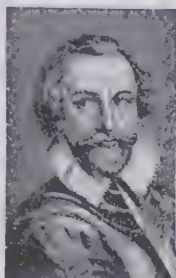
Though the Eskimos are interesting, men have gone into the frozen North for other reasons. Whalers at all times have sailed in search of the oil-giving monster, and have added little by little to the knowledge of northern coasts; and, following Ohthere, many brave Northmen visited Greenland, Iceland, and the surrounding islands and coasts. Others have sought a passage from ocean to ocean, the Northwest Passage, of which you have read so much.

As we look at our north polar map, we find many of the names of the dauntless men who faced, one after another, the storms and the ice and the dangers of starvation in small and badly provided boats, to find out the secrets of the Far North. We remember the voyages of Sir Hugh Willoughby and Richard Chancellor, and how they opened up trade in the White Sea port of Russia, as we read on another page, and to these we

MEN WHO SEARCHED FOR THE POLES



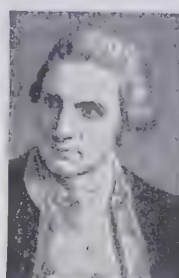
Willoughby



Frobisher



Hudson



Captain Cook



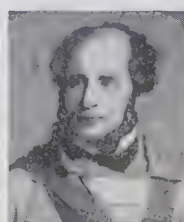
Belcher



Sir John Ross



The race of men of all nations for the North Pole.



M'Clure



Sir James Ross



Parry



Amundsen



Sverdrup



Sir John Franklin



Captain Scott



Lieutenant Shackleton



Mr. Jackson

These are some of the brave men who have risked their lives to reach the Poles. The middle picture shows how successive explorers have got nearer and nearer to the top of the world. Foremost is Captain Peary, behind him the Duke of the Abruzzi, then Dr. Nansen, then Nares, Nordenskiöld, and others. The photographs of Captain Scott and Mr. Jackson are by Thomson, and that of Lieutenant Shackleton is by J. Beckett.

can add those of Frobisher and Davis, belonging to the days of Elizabeth. On the northeast coast of Novaya Zemlya, we find Barents Land, and a bay called Ice Haven. These recall one of the most interesting of the voyages of those days. Barents and his stalwart friends were Dutchmen, and they sailed from Holland, carrying with them silks and velvets, with which they hoped to open up trade with China by the northeast route.

THE LITTLE HOUSE WHERE A FEW MEN SPENT THE ARCTIC NIGHT

When the ice closed in, and the storms made it impossible for them to go further, they were forced to run their ship ashore and make a house of shelter from her planks, and live as best they could in it for many weary months through the long arctic night.

Bears and foxes prowled around them, and they felt far away from the bright, shining homes where they were so sorely missed. When the spring came, they built an open boat, and in it made their way homewards, landing on the north of Europe. They were picked up by a ship, but the heroic Barents died in the open boat. It gives us an idea of the sort of men these were when we read their journal, and find that they never missed a chance of airing and refolding the precious goods with which they had been entrusted. In the Rijks Museum at Amsterdam are the trifles they left behind them in the House of Safety at Ice Haven; little books and instruments, pieces of clothing, candles that will still light. They were discovered by a Norwegian captain and presented to Holland in memory of her gallant sons 274 years after their owners had closed the door and started on their adventurous journey homeward.

THE MEN WHO MAPPED OUT THE WORLD AROUND THE NORTH POLE

And still the north polar map went on filling up, as brave men continued exploring and naming shores and straits, islands and coasts. We can mention only a few out of their great number, such as Hudson and Baffin, Bering and Cook, John and James Ross and Parry. These last bring us to the great name of Franklin. He made several expeditions about Hudson Bay and Great Bear Lake, surveyed many miles of coast, and, after superhuman exertions, died June 11, 1847, while trying to find the Northwest Pas-

sage, near King William's Land. Not one man of the expedition came home to tell the sad tale.

THE RELICS OF SIR JOHN FRANKLIN THAT MAY BE SEEN IN LONDON

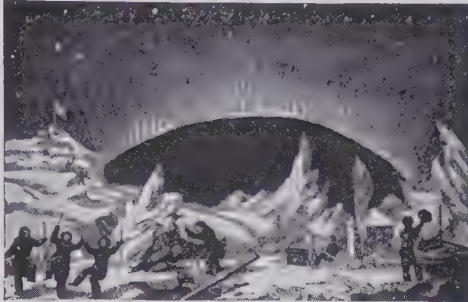
Many expeditions were sent out from England and America to seek the two lost vessels, the Erebus and the Terror, and to discover what had become of the brave men who had sailed in them. It was years before any traces of their fate were found in the great white North. They had all died from cold and hunger. Among the exhibits at Greenwich Hospital are a number of relics of Sir John Franklin that were collected and brought home. There was also found the paper giving brief particulars of when the ship was left and of the loss of the commander and the sledge parties.

These expeditions which went out to search for news of Franklin gained much knowledge of the great mass of islands and straits at the extreme north of the New World, and the Northwest Passage was actually traversed in 1851 by M'Clure. Not quite all of it was made by water, however. Five ships belonging to one of these expeditions were abandoned by order of the leader. Only one, the Resolute, was ever heard of again. She drifted 1,000 miles, and the American captain who found her took her into port; and in the end she was refitted and restored, even to the libraries of the officers, and sent across the Atlantic as a present to Queen Victoria and the British people.

HOW MEN CREPT NEARER AND NEARER TO THE TOP OF THE WORLD

And still the efforts went on, in spite of loss of life, loss of ships, and hardships of every description. Dr. Elisha Kent Kane, Dr. Isaac I. Hayes, and Charles Francis Hall, in American ships, all helped to gain knowledge of Franklin and the North. Captain Hall spent five years among the Eskimos, and gives us, in his book, most interesting descriptions of their way of life. The islands of Spitzbergen were thoroughly examined, also those of Novaya Zemlya. Austrians discovered and named Franz Josef Land, far north of Novaya Zemlya, and ever the boldest and most fortunate crept a little nearer, and a little nearer, to the mysterious region of the Pole itself. Professor A. E. Nordenskiöld, a Finn by birth, but a citizen of Sweden, made

TRAVELLERS NEAR THE NORTH POLE



Here we see the British flag planted at the North Magnetic Pole by Sir James Ross. He accompanied the expedition of his uncle, Sir John Ross, that started in 1829 and spent about five years amid arctic snows.



Ross's ship, the Victory, became ice-bound. It had to be abandoned, and the crew made their way over the snow till they found a whaling vessel to take them home. Here the men are building snow walls round the ship.



Sir William Parry made no fewer than five arctic expeditions, and in this picture we see the two vessels with which he made his second voyage, in 1819. On returning to England, Parliament awarded him \$25,000.



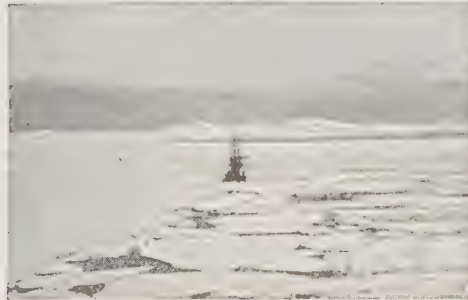
In 1902 a German expedition under command of Professor von Drygalski went to the antarctic seas and discovered Kaiser Wilhelm II. land, off the coast of which their vessel, the Gauss, wintered, as shown here.



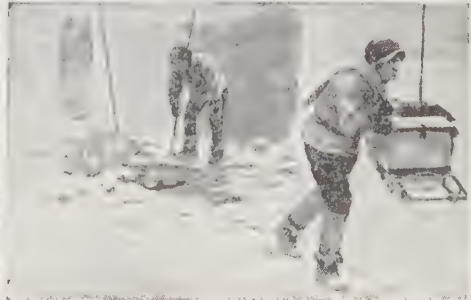
In this picture we see some of the German explorers who went to the antarctic regions in the Gauss in 1902, camping out on the ice. They returned home in 1903.



This picture, which shows the little house and tent occupied by Captain Peary on one of his polar expeditions, is from a photograph taken at midnight.



Here we see the Morning, one of the two ships that went to the aid of Captain Scott's south polar expedition in 1903. To the left the solid ice can be seen.



The explorers with Captain Scott's expedition used drag-nets to examine the life of the Antarctic Ocean. When dragging, they sheltered behind snow walls.

several expeditions into Greenland, and in 1878 and 1879 succeeded in crossing over the top of Asia, thus making the Northeast Passage. In 1879, Lieutenant Frederick Schwatka, of the United States Army, made a successful expedition, discovering perhaps the last relics of Franklin. In 1881, Lieutenant A. W. Greely, also of the United States Army, with a small party, set out for Lady Franklin Bay. He was left with provisions for two years, but not until 1884 did the relief expedition reach the party. Some had died of starvation, and all were very weak.

In 1875, the *Alert* and *Discovery* sailed away under Captain Nares, to try to reach the Pole by Smith's Sound. After being frozen in the ice for the winter, when the men made many exciting and dangerous sledge journeys, they returned home, having opened up large tracts of new country.

THE FIRST CROSSING OF GREENLAND BY NANSEN AND HIS COMPANIONS

Dr. Fridtjof Nansen, a brave Norwegian, was the first to cross Greenland from one coast to the other. It was a most difficult journey, toiling up for three weeks to the inland plateau, about 9,000 feet high. The sledges had to be dragged up the steep way over rough and soft ice. Once on the high, cold plateau, the ice became firmer, and the onward and downward journey was made by hoisting sails on the sledges and sending them racing down the slopes, while the four men glided along on their swift snow-shoes.

Robert E. Peary, of the United States Navy, is the great hero of discovery in the north of Greenland. During one week of one of his journeys he discovered thirty glaciers, and later succeeded in rounding the north of Greenland. Standing on a tremendous cliff 4,000 feet high, he had a magnificent view, which proved to him that Greenland was indeed an island. Mrs. Peary went to Greenland with him on several of his expeditions, and there a little daughter was born to them, September 12, 1893.

Doctor Nansen, who had learned much of the winds and the currents while exploring Greenland, believed that a ship might drift nearer the Pole than any one had ever been. So a ship called the *Fram* was built, immensely strong, and with a little party of thirteen left Christiania

in 1893. Instead of trying to keep out of the ice, the little boat sailed into it, and was frozen in. The ice floes drifted back and forth, and not until August 13, 1896, was the ship finally broken out. It did not reach the Pole, but it did go further north than any ship had ever gone before.

THE WRECKED SHIP THAT DRIFTED WHERE NO MAN HAD EVER BEEN

The account of how the *Fram* drifted slowly on, how usefully and pleasantly the time was passed, how charming and homely were the festivals on birthdays and at Christmas, all reads like an impossible romance when we think of the bitter cold, the terrible winds, and the lonely ship lifted bodily up by the ice till her bottom could almost be seen.

After nearly two years, Nansen thought he, with a companion, could accomplish more by leaving the ship and sledging with dogs towards the Pole than by staying in the drifting ice any longer. So he set off in March, 1895, with Lieutenant Johansen, on a most dangerous journey. They succeeded in reaching a little farther north than did the *Fram*, but their journey lasted many months. They spent the long winter, sleeping most of the time in a little hut they put up near Cape Flora, in Franz Josef Land.

By accident they fell in with an expedition sent out by Mr. Alfred Harmsworth, now Lord Northcliffe. This expedition, under Mr. Frederick George Jackson, spent nearly three years in Franz Josef Land, but did not get very far north. The relief ship sent out for Jackson took Nansen back to Norway, and soon he heard of the safety of the *Fram* and all on board.

In 1897 the intrepid Andrée, a Swede, tried another way of reaching the Pole. This was by balloon, starting from Dane's Island, Spitzbergen. He was last seen floating away to the north, and was never heard of again after that day. No one knows what became of him and his two companions.

Many other men explored the North, every one adding something to our knowledge of the regions, but no one getting very close to the Pole. In 1903, Captain Roald Amundsen, a Norwegian, in a tiny ship, the *Gjoa*, set out to make the Northwest Passage. The boat was frozen in for three winters, but finally got free, and passed through Bering Strait

THE PEOPLE OF THE GREAT WHITE NORTH



The people of the great white North live much the same to-day as did primitive man thousands of years ago. They are barely civilized, and dwell in rude huts, as we see here, which shows a group of Laplanders at home.



In summer the Eskimos live in tents made of seal-skins sewn together with bone needles and the sinews of animals. In winter they build huts of snow.



* This picture shows an Eskimo hut made of stones and earth. The cold of the climate will not allow trees to grow, and consequently wood is very rare and costly.



* As a rule, the Eskimo women, some of whom are seen in the picture, dress in the same way as the men. Their clothing is of sealskin, with the fur inside.



* This is the summer home of a family of Laplanders. The dog shown in the picture will be used, in company with others, to haul a sledge in the winter.

* Three photographs copyright by Messrs. Underwood and Underwood, N.Y.

in August, 1906. This was the first ship to sail from ocean to ocean north of Patagonia.

HOW COMMANDER PEARY FOUND THE POLE AT LAST

We have already spoken of Lieutenant Peary's exploration of Greenland. For years he thought of little except the frozen North. He had discovered Greenland to be an island, and had found many interesting things about the desolate land, but he was not satisfied. Finally he reached the determination to try to do what so many had failed to do, that is, to reach the North Pole. The first trial in 1898 was unsuccessful, of course, but he made other expeditions, and still others, until at last he was successful. But the attempts were not wasted, for each expedition taught its lesson and showed what mistakes must be avoided if success was finally to come. Every voyage he learned more about the ice, the Eskimos, what the dogs could do, what provisions must be carried, and why others had failed.

A SHIP WHICH COULD FORCE A WAY THROUGH ICE

A number of men interested in the far North, formed a society known as the Peary Arctic Club, and provided money for the brave explorer. It had been found that ordinary ships were too light for the work, for in the terrible North the great floating fields of ice sometimes come together and crush a ship like an egg-shell. So the club had a ship built especially for the work. It had very powerful engines, and its frame was braced at every point to resist the crushing force of the ice. Then, too, it was sharp in front, in order to cut through the ice. This ship was called the Roosevelt, in honor of the former president, and was used first by Commander Peary in the expedition of 1905 and 1906. Though this expedition was not successful, it went further into the North than any had gone before. In fact, it came within less than 200 miles of the Pole.

In 1907-8 the ship was entirely refitted. New engines were provided and other changes were made. On July 6, 1908, the ship, carrying the party which was finally to be successful, left New York, commanded by Captain Robert A. Bartlett, a brave Newfoundland sailor. The Roosevelt sailed up the Greenland coast and stopped at Etah, which is the

most northern point at which people live all the year round. From here the ship carried twenty-two Eskimo men, seventeen women, ten children and two hundred and twenty-six dogs. On the fifth of December, 1908, the boat reached Cape Sheridan, though it had several times been almost caught in the ice.

THE IMPORTANCE OF FOOD IN THE ARCTIC REGION

It is easy enough to get clothes which will keep one warm while in the cold regions, but where every particle of food must be carried along, and to be without food is death, it is necessary to choose the best and the most easily packed food which is nourishing and at the same time takes up little room. It has been found that pemmican, which is dried beef ground to a powder, and mixed with tallow, is the best food. Sugar is also good. The pemmican furnishes strength and sugar furnishes heat.

Commander Peary had formed his plan carefully. Six men who had come with him, seventeen Eskimos, nineteen sledges and one hundred and thirty-three dogs left the land February 28, 1909. After they had gone a certain distance over the ice, a small party would load all the food it carried, beyond what was necessary to take it back to the ship, on the sledges of those who were going forward. The supporting party would then turn back. Later another party would also turn back, leaving any unnecessary food with those who were to go on. The plan worked well, for when the last supporting party turned back it was found that the party which went on to the Pole had twice as much food as was necessary to bring it back to the ship.

THE POLE IS REACHED AFTER CENTURIES OF EFFORT

Finally (150 miles from the Pole), Captain Bartlett, who commanded the last supporting party, turned back, and Commander Peary, Henson, his faithful colored attendant, and four Eskimos started on the desperate rush to the Pole. Good progress was made, and finally, on April 6, 1909, the instruments seemed to show that the Pole had been reached. Several flags were hoisted, and the party camped. Mr. Peary went several miles further on and then turned to the right to take observations, and to be sure that he had gone far enough. For about thirty hours he remained around the camp tak-

FARTHEST NORTH AND FARTHEST SOUTH



Lieutenant Shackleton and his fellow-explorers suffered many hardships during their dash to the South Pole. Food fell short, and the ponies of the expedition had to be killed until only the three shown here were left.



Here we see Commander (now Admiral) Peary with some of the Eskimo dogs which he found so useful in his conquest of the North Pole. They have proved themselves to be better than ponies for this work.

ing photographs, making observations and the like.

They had reached the Pole. The question was, could they get away? For with the unsuccessful attempts in the past the trouble had been to get back to civilization in safety. A broken sledge, an accident to the dogs, or any one of a dozen things might prevent them. On the return journey, they threw away everything except what they would be sure to need, so that the dogs would have less to pull, and started back on the seventh of April. For most of the way they kept the trail which they had made while advancing, and some of the snow huts which had been built a month before were still standing.

Finally, sixteen days from the time they left the Pole, they reached land. Two more days brought them to the ship, where they told of their wonderful news, but they could not tell the world, because for more than two months longer the ship was held fast in the ice. The time was spent in exploring, hunting and seeking to find out more of the region in which they were. Finally they broke the ship out of the ice, and made a quick voyage back to Labrador and gave the news to the world. Congress voted to promote Commander Peary to the rank of rear-admiral as a reward for his success.

THE MEN WHO HAVE EXPLORED THE BOTTOM OF THE WORLD

Till the seventeenth century it was believed that there was an immense southern continent connected with Tierra del Fuego, and stretching up to Australia. Many adventurous voyagers set back by degrees the coast-line of this imaginary continent to the outline sketched more or less about the antarctic circle on our maps of to-day. We meet with many names already familiar—that of Drake, who showed "that the Atlantic and Pacific unite south of South America in the free and unconfined open;" Cook, who set limits to the antarctic region; Ross, who, with his two ships, the *Erebus* and the *Terror*, sailed from Tasmania on New Year's Day, 1841, and discovered the mountainous country of Victoria Land, and the two lofty volcanoes that he named after his ships.

Besides these are Weddell, Biscoe, and Balleny, all Englishmen, who added to our knowledge of the antarctic; D'Urville,

a Frenchman, who landed on the coast and called it Adélie Land, and Charles Wilkes, a United States naval officer, who named Wilkes Land. Many other expeditions filled out the outlines of the continent, bit by bit, but few were able to go inland, if, indeed, they could land at all. Interest in the antarctic increased in England, and now we have several names of which to tell.

In 1901, Robert F. Scott, Royal Navy, led an expedition which spent more than two years in the antarctic. Several long journeys were made on the ice-cap which covers the land, and the relief ship brought the party home in safety. At about the same time, a German and a Swedish expedition also made explorations.

In 1908, Lieutenant Ernest Shackleton, who had been with Commander Scott, set out to reach the South Pole. A motor car was taken, and ponies, instead of dogs. The car was of little use, but the ponies did good work. The going was terrible, and the ponies failed one by one. The last fell into a crevasse and was lost. The party had intended to kill him for food that night, and because of this loss the Pole was not reached, though the party came within ninety-seven miles of it. On the way they climbed to a great tableland, 11,600 feet above the sea.

THE SOUTH POLE IS REACHED TWICE

We have already told of the voyage of Captain Roald Amundsen over the top of North America. When the news came that the North Pole had been reached, he was preparing an expedition to explore the arctic regions. Suddenly he decided to make a dash for the South Pole in the *Fram*, the stanch little ship that Nansen had used.

On January 14, 1911, he landed with nine companions in the Bay of Whales, climbed to the top of the ice barrier which guards the shores, and built a hut on the ice, which was to be his home for nine months. He had with him abundant supplies for two years, and 115 Eskimo dogs, which he had brought from Greenland. Meanwhile an English expedition, under Captain Scott, of whom we have already spoken, was camped more than 350 miles eastward, under the shadow of the burning volcano, Mt. Erebus.

In February, Captain Amundsen began taking supplies toward the south,

WHAT LIFE IS LIKE AT THE NORTH POLE



Men tried for centuries to reach the North Pole and at last succeeded. But all the time the bear, "the little old gentleman in the fur jacket," as the Laplanders call him, has roamed at will over this dreary spot.



When at last man reached the Pole, he found simply a dreary waste of snow and ice, as always here, and all he could do, after years of effort, was to build little snow shelters in which to rest, and then return home.

The lower picture is published by permission of the "New York Herald," and that of Upernivik on page 546 is by Mr. Sandon Perkins.

and leaving them there for the future. When winter came on, for you must remember that south of the equator the seasons are reversed, the men were very comfortable in the little hut, which they called Framheim. Every preparation was made during the winter.

When spring came, five men with four sledges and fifty-two dogs started south on October 20, just a week before Captain Scott's party began the dash for the Pole. During most of the way, the Norwegian party found good ice and good weather, though the mountain range they crossed was hard to climb, and some of the dogs were lost. The men all used the Norwegian skis, and the dogs trotted along. Finally, on December 14, 1911, observations showed that they were almost at the Pole, and, after further observations, on December 16th, a tent was erected, and the Norwegian flag and the pennant of the Fram were hoisted. These were left standing, and some records were left in the tent, when the party started back toward the ship. The high land around the Pole was called Haakon VII Plateau, in honor of the king of Norway.

The journey back was without mishap, and 99 days after the party left Framheim it was back, safe and sound.

The second Scott expedition, in the ship *Terra Nova*, left Port Chalmers, New Zealand, November 29, 1910, and established winter quarters on M'Murdo Sound in January, 1911. The expedition was large, and many of the party were scientists, who spent much time in studying the life on the ice and in the sea, the temperature, the structure of the land, and the like. The party had nineteen Siberian ponies, thirty dogs, and three motor sledges.

Before the winter set in, supplies were placed along the way, and when the spring opened, some of the party started October 27, 1911, just a week after Amundsen had begun his dash. Five days afterward Captain Scott and the remainder started, and overtook the motor sledges. These, by the way, though they could pull heavy loads, broke down, and some of the ponies had been lost. The weather was very bad, with intense cold, high winds, and much snow. Finally, on January 3, 1912, the party was only 150 miles from the Pole. With four companions, Captain Scott started on the last lap of the journey,

sending back four men who had made the trip up to this point. These men reached the headquarters safely, but week after week went by and Captain Scott and his companions did not return. A searching party under Doctor Atkinson found the bodies of Captain Scott, Doctor Wilson and Lieutenant Bowers on November 12, 1912.

From Captain Scott's diary it was learned that they had reached the Pole on January 18th, and found Captain Amundsen's tent still standing. On the return journey, Petty Officer Evans died on February 17th after an accident. Captain Oates had fallen sick, and fearing that he might hinder the progress of the others, walked off into the storm on March 17th. His body was not found. The others staggered on until they reached a point they knew to be only eleven miles from One Ton Camp, where there was abundant food and fuel. Here a terrible storm overtook them. Without food or fuel they were forced to cling to the shelter of the tent. The last entry in the diary was on March 25th. How much longer any of them were alive, no one can say, but it could have been only a few days.

Since the expedition of Captain Scott, two other English expeditions have added much to our knowledge of the antarctic regions. The first, led by Dr. Douglas Mawson, who had been with Shackleton's expedition, suffered many hardships, but made many new discoveries. Sir Ernest Shackleton made the attempt to cross the antarctic continent, but did not attempt to reach the Pole. Several expeditions to the northern regions have been made since Peary's success, but they have been intended to add to our knowledge rather than simply to do again what has already been done.

Here are some of the differences between the arctic and the antarctic regions. The former is a great sea of ice; the latter a great continent with high mountains, some of which are dead volcanoes. The temperatures seem to be lower in the South than in the North. Once the climate of the southern region was warm, for there is coal there, but no animal life is to be found on the vast continent now. Gulls and penguins live along the shore, where they can get food from the sea, but nothing more.

THE NEXT STORY OF COUNTRIES IS ON PAGE 5533.

The Story of FAMOUS BOOKS

A WONDERFUL STORY OF THE JUNGLE

OF all of Kipling's stories, most boys and girls love the Jungle Books best.

There are two of them, and one story besides in another volume which tells of Mowgli's life after he left the wolf pack forever. The books tell of a child stolen from its home and brought up by wolves. He was taught many things by wise old Baloo and by Bagheera, and by Kaa, the old, old python, and learned to know the Jungle well. We tell you here only a few of Mowgli's adventures. You must get the books to read them all. There are the stories of the fierce wild dogs, of the monkey-people and of the blind old cobra, and many others. It is difficult to say which one likes best. Your editor has read every one of them a dozen times, and he does not know. He would not give up a single one, and wishes that there were quite as many more.

THE STORY OF MOWGLI, THE BOY-WOLF

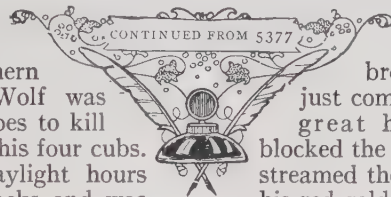
IT was a hot evening among the Seonee hills in Northern India, and Father Wolf was starting down the slopes to kill for Mother Wolf and his four cubs. He had slept the daylight hours away on the warm rocks and was in fine trim, ready and alert for the hunt. His limbs were stretching out for a long, steady run, when of a sudden they stiffened up, and the great wolf leaped high into the air—his spring arrested mid-way. A little naked brown baby ran into the open space before the cave, came boldly up to the great form and tumbled laughing in the dust against it.

"A man's cub!" he cried in astonishment. "Bring it to me," said Mother Wolf, and without so much as scratching his skin, Father Wolf seized the babe in his great jaws and laid it within the cave, where he pushed aside the wolf-cubs and crawled against Mother Wolf's warm sides.

"How smooth he is, how little and how bold!" she cried. "But how comes he here?"

The answer came quickly. First a worrying, snarling growl, and then the huge form of a tiger appeared in the clear moonlight out of the jungle's dense shade.

Father Wolf sprang back into the cave, and took quick stock of his position. He did not fear for himself,



nor for his family, but for the little brown baby which had just come to them. The tiger's great head and shoulders blocked the cave; where before had streamed the moonlight now blazed his red-gold eyes.

"Where is the man-cub? Give him to me!" he snarled. "He is *my* kill!"

"The man-cub is ours!" cried the great gray wolf,—"to kill if we choose!" The tiger's roar filled the cave.

Mother Wolf sprang to her feet, her eyes gleaming savagely, and faced the snarling tiger.

"Shere Khan," she said, "hunter of little naked cubs, the babe is mine! He shall live to run with the Pack, and hunt with the Pack, and in the end he shall hunt thee! Begone!" Not for nothing had Mother Wolf borne the name of Demon ere Father Wolf had won her from the Pack, and the fierce striped cat wavered before her. He could not force a way through the cave's narrow entrance and he feared the Demon's snap, so he backed slowly and sullenly into the open, snarling a parting taunt that he would tell the Pack of this fostering of a man-cub.

Now the custom among the Seonee wolves was that when it had grown large enough, every cub had to be shown to all the wolves before it

could be taken into the Pack. Accordingly upon a certain night each year all the wolves came to the Council Rock—a hillside littered over with rocks and gray boulders, where the wolves could easily hide.

Father Wolf took his own cubs when they could run, and the little man-cub, whom they called Mowgli, the Frog, to the hill-top for the Pack Meeting. The moon was shining brightly down upon the scene and threw dark shadows from the rocks, and in every shadow crouched or stretched a wolf. In the centre the cubs tumbled and rolled while their parents sat round in a circle. Upon the Council Rock itself sat Akela, the Leader of the Pack, and with him some forty or more wolves of every size and color. Every now and then a wolf would cross swiftly into the opening, and sniff at a cub and examine him before going back to his place. Regularly rose and fell Akela's cry, "Look well, O Wolves, look well! Ye know the Law!" as cub after cub was pushed into the moonlight to be examined. At last came Mowgli's turn and he sat laughing and playing with the pebbles in the centre of the ring.

Then sounded a different note from the Gray Wolf's cry; it was the roar of Shere Khan from behind the rocks. "The cub is mine. Give him to me! What have the Free People to do with a man's cub?"—And the rocks re-echoed "A man's cub!" and Mother Wolf's hair bristled upon her neck, and all the wolves sat up uneasily.

Now, it was the Law of the Jungle, that when any dispute arose as to the right of a cub to be admitted into the Pack, he must be spoken for by two members who were not his father and mother.

"Who speaks for this cub?" said Akela, and the Pack stayed its murmuring in the warm, still night, but not one spoke. Mother Wolf prepared for a fight, when Baloo, the Brown Bear, who teaches the wolf cubs the Law of the Jungle, rose up and grunted. He was the only other creature allowed at the Council and when he spoke all listened. "The man's cub?" he said. "There is no harm in him. Let him run with the Pack. I will teach him."

Mother Wolf relaxed a little, but she was still anxious, when Bagheera the Black Panther, happening by chance to

come that way as he returned from a kill, bought Mowgli's life from the tiger with a dead bull.

So Mowgli entered the Seonee wolf pack for the price of a bull, and on Baloo's good word. He lived in the cave with Mother and Father Wolf and played with the cubs, and had for his teachers in the Law of the Jungle, the great sleepy brown bear, and the black panther. He grew, and waxed strong and agile, and skilled in all the signs that the wild beasts know; the scratch of the bat's claw, and every rustle in the grass, and every splash of a little fish. He had many friends, for Bagheera and Baloo loved him more than any little wolf-cub, and he was useful in picking the long thorns out of the wolves' feet. But Shere Khan, the tiger, hated him always, and plotted to kill him some day. Mowgli knew something of men, for there was a village below the jungle, on the slopes, and sometimes he would go down and watch from the maize-field, but he thought of them as very different from the loved Jungle Folk and felt no wish to go among them.

Now it came to pass, when Mowgli was eleven years old, that all the wolves who had been at the Pack Meeting when he was chosen, were old, and Akela the Lone Gray Wolf was old, and Shere Khan the tiger told the young wolves that they should not be led by a dying wolf and a man's cub. And the Pack grew to think that he had no place with them. Still Mowgli knew it not, until at last, one warm, sultry day in the forest, Bagheera took him aside and told him the tiger's plot. Then Mowgli's heart was hot within him, for he loved the Jungle Folk, and he determined to pay Shere Khan in full measure for his evil-doing. He consulted Bagheera, the Black Panther, who sent Mowgli down to the men's huts in the valley to fetch the Red Flower that grows outside their huts in the twilight. Every creature in the jungle feared this flower, and no beast would call it by its proper name.

Mowgli ran swiftly down into the lowland where the villagers lived and peered through the window of a hut and watched the fire leaping on the hearth. All night he saw the husbandman's wife feed it with black lumps, and in the morning, as a child was carrying some forth into the cow-byre, Mowgli took the pot from the

boy's hand and disappeared into the mist. All through the day he sat in the cave and fed his fire-pot with dry branches, and in the evening he was summoned to the Council Rock. Shere Khan was there and all the wolves, but Akela did not sit upon the rock, but lay beside it to show that he was no longer leader, for he had missed his kill the night before, and the leadership of the Pack was open.

Then Shere Khan took it upon himself to speak in the meeting and he rudely demanded that the man-cub be given him for meat. Akela and Bagheera and about ten wolves gathered around Mowgli, but the rest sat up and yelled, "He is a man—a man—a man!" and they gathered around Shere Khan, whose tail began to switch. "Now the business is in thy hands," said Bagheera to Mowgli. "We can do nothing except fight!" Then Mowgli, furious with rage and sorrow, for he had not known how the wolves hated him, flung the fire-pot on the ground, and thrust his dead branch into the fire, and whirled it above his head among the cowering wolves.

"I see that ye are dogs," he cried. "I go from you to my own people. The jungle is shut to me and I must forget your talk and your good company. There shall be no war between any of us and the Pack, but there is a debt to pay before I go."

He strode over to Shere Khan and caught him by the tuft on his chin, and beat him over the head with the flaming branch till the tiger whirled in an agony of fear. Then he flung him aside and struck around the circle of wolves, till they and the tiger ran away howling. But when they had gone, Mowgli caught his breath and sobbed as though his heart would break; he had never cried in all his life before.

Then he ran to the cave and bade farewell to Mother and Father Wolf and the cubs, and just as the dawn was beginning to break he went alone down the hillside to the lowlands and the villages. Up to this time he had lived with the Jungle Folk and never thought of himself as other than a wolf, but the Jungle had cast him out and now he must make himself a man.

It was midday when finally he reached a village some twenty miles distant from the Council Rock, and Mowgli was hun-

gry as he sat down to wait by the gate. A man came out and he opened his mouth and pointed down it. The man ran away and brought the priest and many of the villagers, and they stared and pointed at the little brown wolf-child. The women pitied him for the scars on his arms and legs, and one came closer and peered at him, thinking him like her boy which the tiger had taken from her. Now Messua's husband was rich, and the priest thought it a good thing to pretend that he had been the means of restoring her son.

"Take the boy into thy house, my sister, and forget not to honor the priest who sees so far into the lives of men," he said, and the woman beckoned Mowgli into her hut. There all was strange to him because he had never been under a roof before, but he saw that he could tear away the fastenings from window and roof, which comforted him. When bedtime came he stretched himself in some long grass at the edge of the field, and there came the wolf-cubs.

For three months Mowgli lived in the village, learning the ways and the speech of man. The children made fun of him because he knew nothing of their games, and the priest scolded him because he broke some of the village laws, and he told Messua's husband to give him work to do. So Mowgli was set to herd buffaloes, and every morning he went out with the other children to the grazing ground on the plain among the rocks and ravines and muddy pools. He made himself master among the other herders, and bidding them pasture the cattle by themselves, drove the buffaloes to the edge of the plain where the river came out of the jungle. This was the spot where he had agreed to meet Gray Brother, the eldest of the wolf-cubs.

"What news of Shere Khan?" said Mowgli.

"He is away, for game is scarce, but he means to kill thee."

"Very well," said Mowgli; "as long as he remains away, sit on this rock where I can see you as I come out of the village. When Shere Khan returns, wait for me under the dhâk-tree in the ravine in the centre of the plain."

So for many days Mowgli drove the buffaloes out in the morning and back at twilight, and ever he saw Gray Brother's back a mile and a half across

the plain, and he knew that Shere Khan was still away. But one morning he did not see the wolf upon the rock and he drove the buffalo into the ravine with the golden-red flowers, where under a tree sat Gray Brother.

"Shere Khan's plan is to wait for thee at the village gate this evening," said the wolf, panting. Mowgli thought deeply, for the tiger was very cunning and he must meet wile with wile.

"Gray Brother," he said, "canst thou cut the herd in two?"

"Not I, perhaps, but I have brought a wise helper," and Akela appeared from a near-by hole. Then Mowgli told them to divide the cows from the bulls, and he and Akela went with the bulls to one end of the ravine, and Gray Brother took the cows and calves to the other. His plan was to catch Shere Khan between the two. When the herd swayed this way and that, the children ran away to the village to say that the buffaloes had gone mad.

The sides of the ravine were very steep, and Mowgli knew that Shere Khan could find no foothold in his haste. When all was ready he cried aloud to the tiger, and Shere Khan awoke from a deep sleep and came on to battle with a low-toned snarl. Akela began to harry the bulls from the head of the ravine so that they stampeded, and there was no stopping the wild charge of the herd. Shere Khan heard the thunder of the hoofs, and searched the sides of the ravine for some escape, but none was there, and he ran on and on till at the foot of the ravine he came upon the fiercer cows. He turned at bay, but the buffaloes trampled him under foot and swept on, and herd met herd in a wild impact, whose force carried them clear out into the plain. Then Mowgli, with the help of the wolves, while the kites whirled overhead, began to strip the tiger of his ten-foot skin, and as he worked, Buldeo, the village hunter, came to them with insolent offers of help. But Akela held him down on the ground while Mowgli went on cutting the skin with his knife, until he took pity on Buldeo and allowed him to go back to the village.

It was misty twilight by the time Mowgli and Akela had herded the buffaloes and brought them back to the gate. The conches and bells were blowing and ringing and all the village waited by the

gate. Mowgli thought they were there to welcome him because he had killed the tiger, but they shut the gate against him and belabored him with stones and called him Sorcerer, Wolf-brat and Jungle Demon. Only Messua took pity on him, but even she told him to go away lest the villagers should kill him. So Mowgli drove the buffalo herd in through the gate and turned away and left the village. Man had turned him out as the wolves had done, but this time as he looked up at the stars he felt happy.

He went back to the forest and hunted with the four wolf-cubs from that day. But he was not now just the little man-cub that had sported with Baloo and run with the Pack, half wolf, half man, that the animals had half despised, half feared. He knew the secrets of the jungle, but he had gained the power of man, and all the animals feared him, and were his friends. He had not meant to punish the village for stoning him, because Messua lived there, and he loved her. But one day Buldeo the hunter was boasting in the forest how Messua and her husband were to be killed for sheltering the Jungle Demon, and their lands divided among the villagers. When Mowgli ran down into the village, he found Messua gagged and bound and wounded, and her husband with her. The sight of her blood made him sick and angry, and he planned a great revenge upon the village. He sent for the elephants and bade them destroy the huts and walls; he drove the deer and the pigs among the crops, and bade the panthers walk in the streets. And the Jungle came in upon the village and all men were afraid, thinking that a curse had come upon them. So they left their huts and their temples and fields, and they ran from the evil place, and it became a wilderness. Only Messua and her husband escaped, for Mowgli had sent them away through the forest to the English, before he let the jungle forth upon the crop-lands.

And the years rolled by and Mowgli grew to be a man. Father and Mother Wolf had died and Mowgli rolled a boulder against the mouth of the cave and cried the Death Song over them. Baloo and Bagheera grew old and stiff, though they still went to the "looking-over" at the Council Rock. Akela met his death in a fight against the Red-Dogs of the Dekkan, when Mowgli entrapped

them to the fords through the gorge of the Wild People, the honey-bees. Only Mowgli and the young wolves of the pack grew stronger. Hard exercise, good eating, and baths when he was hot and dusty, had given him strength and growth far beyond his age, and even a whisper of his coming cleared the wood-paths.

The year that Mowgli was seventeen, the spring seemed especially beautiful. The Black Panther lay on his back and beat with his paws in the air, the birds tried over the first few notes of their spring song, and the elephants trumpeted through the valley in the moonlight. These signs were not fresh to him, and usually he delighted in them, seeking for the first spring flowers, and imitating the new voices of the Jungle People. But this year a feeling was on him that was utterly strange, and drove his breath out in little gasps and choked the sounds in his throat. The peacock called to him, and the great kite, but he could not answer them, and he turned hot and cold, and then neither hot nor cold, but angry with that which he could not see.

He called to his brothers, the four wolf-cubs, to make a spring running with him to the marshes of the North. He called, but never one of the four answered, for they were far away practising their spring songs. So Mowgli went by himself, and forgetting his unhappiness, sang aloud as he sped under the white moonlight through the spring-decked jungle. As he came to the marshes, the scent of flowers stopped him, for this was as far as his hunting-ground ever went. The marsh ended in a broad plain, and there a light twinkled. It was long since Mowgli had concerned himself with man, but this night the Red-Flower drew him forward. He pushed on to where the light stood and saw he was in the outskirts of a village. The door of a hut opened and a woman came out. It was Messua, and Mowgli in the grass began to shake as though he had fever. He called to her and stepped into the light.

Messua ran quickly, then stopped. This was not the Mowgli of her dreams. Instead she saw a youth, fine, strong and fair, his locks crowned with a wreath of jessamine. She turned to run away, but he placed a hand upon her shoulder and said softly, "Messua, O Messua!" and his voice banished all her fear.

"My son," she stammered, "but no longer my son. It is a godling of the woods." And she pulled him into the hut and set food before him, and Mowgli drank the warm milk in long gulps, Messua patting him on the shoulder. Then he slept in her hut, and when after a day and a night he woke, Gray Wolf had come to find him. He went back to the Jungle, knowing that he must bid all his friends there good-bye, for the call of the man-pack was strong in his ears, and he had promised Messua to return.

They called a meeting at the Council Rock, but the animals were busy with their spring running and could not come. Only Bagheera the Black Panther and Kaa the Great Snake, Baloo the Bear and the four wolf-cubs met to say farewell to Mowgli, Master of the Jungle, who was leaving to make another trail.

"Cry thy fill, Manling," said Kaa as Mowgli came heavily up hill and cast himself face downward upon the Rock.

"What is it?" the boy moaned. "My strength is gone from me. The Red Flower is in my bones. I bathe and am not cool, I lie down and do not rest. Ever I hear a double step upon my trail and when I turn my head no one is there. I call and none cry again."

Kaa spake again, turning around the Rock: "Man goes to Man at last though the Jungle does not cast him out." And the wolves began in chorus, "So long as we shall live . . ."

But Baloo, blind now, and very old, said, "Little Frog, make thy lair with thine own blood and people; only when there is need, remember the Jungle is thine at call."

Still Mowgli's heart beat unevenly, and breath came in gasps. "I would not go; but I am drawn. How can I leave the Jungle?" he said again.

"Having cast the skin, we may not creep into it afresh; it is the Law!" the wise snake hissed.

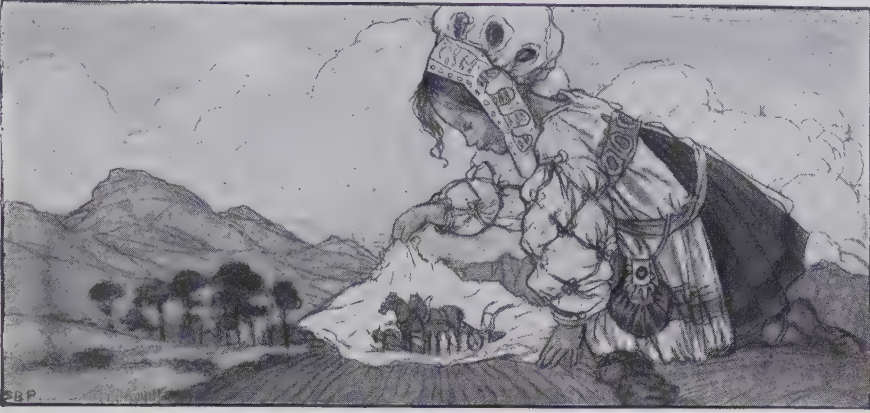
A crash sounded in the thicket and Bagheera stood by the Rock, dull stains dripping from his paws and lips. "For the bull that bought thee," he said to Mowgli. "All debts are paid now. Farewell, Master of the Jungle. Remember Bagheera loved thee." And he was gone again while the hillside re-echoed "Farewell."

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 5615.

THE GIANT EAGLE'S WINGS OF STONE



In the Calgardup district of Western Australia there are many wonderful caves, and one of them, owing to its great size, is known as the Mammoth Cave. The entrance, which is surrounded by great ferns and half hidden amid giant trees, has an Oriental appearance, and inside it is like a palace of the Arabian Nights. From the roof hang many fantastic stalactites, like those which we see on page 1377, and the dripping of mineral-laden water has built up on the floor wonderful rocky shapes, such as that seen in this picture. This formation is known as the Eagle's Wings, and at a distance has the appearance of a huge bird, with half-spread wings, perched on a great boulder. The cave also has a wonderful representation of an organ.



THE GIANT'S PLAYTHING

LONG ago, giants lived among the German mountains. Now, there was a great castle, called Burg Niedeck, that stood on top of the highest mountain in Alsace, and here the most powerful of the giants lived with his wife and family. He had one child, a little girl named Freda.

Freda was as tall as a church steeple. She was a curious child, and very fond of prying about and looking at things which she had been told to leave alone. She was allowed to roam all about the mountains, and to play in the woods and forest, but she was not allowed to go down into the valley where the little people lived.

These little peasants tilled the ground, and planted corn and wheat and barley, and grew the vines, and dug the ditches, things the giants could not do. And the giants lived by taking what the little people made. Now, it was said that the first time a peasant found his way up into Burg Niedeck it would be the end of the giants. But Burg Niedeck was very difficult to reach, and no peasant had ever thought of trying to get there.

One day Freda was playing outside the castle gates. The valley looked so cool and green and shady that she slipped down the mountain-side to find out what was below.

Presently she saw a peasant plough-

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ing. He had two horses, and the iron of the plough shone and glittered. With

a cry of joy, Freda knelt down.

"What a dear little thing! I will take it home to play with."

Spreading out her handkerchief, she carefully lifted the plough and the horses and the poor peasant into the middle; then, taking the corners in her hand, she ran up the mountain-side, skipping and jumping for pleasure. Her father met her at the gate.

"Now, little one," he said, "what is pleasing you so?"

"Look," said Freda, spreading out her handkerchief, "I have found a most wonderful new toy." And she lifted out the plough and the peasant.

But the old giant frowned and shook his head angrily.

"What have you done, thoughtless one?" he said. "The peasant is no toy. Have you not heard that as soon as a peasant comes to Burg Niedeck there will be an end of the giants for ever? Take it back instantly to the valley, and perhaps the spell will not break."

Sadly Freda took the plough and the horses and the peasant back, and set them in the cornfield. But it was too late. That night all the giants disappeared, and in the morning the castle of Burg Niedeck stood in ruins. And no giant has been seen there since.

THE WIND SINGS DOWN THE CHIMNEY

HANS ANDERSEN'S TALE OF THE SIGNBOARDS

THE Wind is a merry creature. Have you seen him sweeping across a field and making the wheat ripple like the waves of the sea? That is the Wind's dance. And the Wind not only dances, but he sings. Listen to him singing down the chimney now.

"Shoo! shoo! sh-sh-sh!" the Wind is saying. "If there were no old gentlemen wearing tall hats that I could send spinning down the road, I should be tired of town life. All the excitement and fun have gone from it. A hundred years ago there was nothing I liked better than a good blow down this street. It was more like a picture-show than a place of business. Every house was hung with signboards. There was the tailor's board with figures painted on it to show that he could turn the shabbiest rascal into a fashionable gentleman; the barber had a long pole with a wooden razor hanging from it; fishes, loaves, hats, cheeses—all the things, in fact, that were sold in the town—were painted on signboards, and when I made them swing and clatter, the noise was deafening. What a merry time I had one night among the signboards! What was it set me on that piece of mischief?"

The Wind grew silent for a few minutes, and then gave a jolly roar that made the house rock. "Oh, I recollect it all!" he shouted down the chimney. "It was the day when the shoemakers removed from their old guildhall into their new building, and brought their signboards with them. Rich and powerful were the shoemakers in those old days, and their procession was a sight worth seeing.

"They had a clown to clear the way—a comical figure with a black face and clothes made out of a patchwork of colors. How the crowd laughed as he struck right and left with his great bladder! I don't see such frolic nowadays. Behind the clown came the musicians; they were followed by the banner-bearers with the great silk banner of the shoemakers, adorned with a large black boot and a two-headed eagle.

"Mounting the scaffold where the signboard was to be put up, the chief shoemaker began to make a speech. But the clown jumped up beside him, and the people roared at his grimaces.

Joining in the fun, I rattled every signboard, and the speaker got down, saying: 'It is no use trying to talk in this wind. Let us put up the signboard.'

"But I was resolved," chuckled the Wind, "that the signboard should not be put up. I blew the shoemakers' aprons over their eyes; I upset their ladders; I carried away their wigs and hats. At last they gave over struggling, and went to feast in their new hall.

"I was bent on mischief. Having got the best of the shoemakers, I thundered up and down the streets, trying to think of some new prank. I began unroofing old houses, and the air was filled with falling tiles. In the night, a wilder piece of mischief-making occurred to me.

"I got among the signboards and rearranged them. Though I say it myself, the work was performed with wit and skill. When the townspeople woke up the next morning, they found that the inscription 'The Institute for High Education' had been blown on to the billiard club. The Institute got in exchange a signboard taken from the day-nursery: 'Children Reared by the Bottle.' A good-natured furrier had a fox painted on his signboard. This I carried across the street, and put it on a house occupied by a hard, cunning councillor, who pretended to be a saintly person. That made the townspeople laugh; and so did the sign which I stuck in the railings of the judge's residence. It was the barber's pole with the wooden razor. 'The razor' was the nickname that the judge's wife had earned through her cutting tongue.

"But the best joke of all," whispered the Wind, "was the trick I played on the scandal-monger of the town—a rich old woman who was always listening for tales against her neighbors. I stuck over her door a notice torn from a building site: 'Rubbish may be shot here.'

"They were merry days," sighed the Wind, "but they never put the signboards up again after I got among them. They pretended it was dangerous, but the fact was that I made some of the people so ashamed of themselves that they did not like to be reminded of my merry trick."

With that the Wind ceased to talk down the chimney, and with a whistle blew away out into the open country.

WONDERFUL PROCESSION OF SHOEMAKERS



The chief shoemaker mounted the scaffold, where the signboard was to be put up, to make a speech. But the clown jumped up, and the people roared at his grimaces. Then the Wind joined in the fun and rattled signboards in the street, and the speaker got down, saying, "It is no use trying to talk in this wind."

THE KING WHO COULD NOT SLEEP

THERE was a fierce and warlike young king who seemed to possess everything that the heart of man could wish. He was very rich and very powerful, and he had a great army, which he led from victory to victory. But, in spite of all his wealth and his might, he was the unhappiest man in his kingdom; his restless mind was so full of ambitious schemes that he could not sleep.

He summoned to his court the most famous doctors in the world, but none of them was able to cure him of his malady, and at last he made a proclamation that

"Well, before you try," said the king, "tell me what your remedy is. Some simple thing that your mother taught you, no doubt."

"Yes," she replied. "It is something my mother taught me. Here it is."

And leading the king to an open window, she pointed up to heaven.

"What! You have come to mock me?" said the king.

"No!" said the little shepherdess. "I have come to teach you to pray."

But the king still thought she was mocking him, and growing harsh with



HIS HEART WAS TOUCHED WHEN HE SAW THE INNOCENT CHILD WALKING TO THE DUNGEON

he would give half of his kingdom to any person who could make him sleep in a calm and natural manner, but he added that anyone who tried to cure him and failed would be imprisoned.

One evening a pretty shepherdess came to his palace and said that she could heal him. In spite of the anguish he was in, the king looked at her with pitying eyes.

"Return home, my pretty child," he said. "You cannot possibly succeed where all the wisest doctors have failed."

"No! I cannot go away," said the little shepherdess, "until I have done my work—until I have tried to save you."

anger, he called in his soldiers, and ordered them to put the girl in a dark dungeon. Sitting in a chair, he watched in a fierce mood the warders bind the shepherdess in fetters. But his heart was touched when he saw the sweet and innocent child walking to the dungeon with a smile upon her bright and lovely face. He followed her, and saw her kneel down and pray when she entered the prison.

"Kind and loving Father," she said, "teach him to pray to Thee with a humble heart for forgiveness for his sins, so that he may lie down at night with peace and happiness in his soul."

Then she remained with her head bowed in silent prayer, and the king sprang to the door of the dungeon, and cried to the warders :

"Unbind her! Set her free at once!"

The king then returned to his room, and knelt down by the side of his bed, and clasped his hands, as he had seen the shepherdess do in the dungeon. No words, however, came from his lips, for he had forgotten the prayers which his mother had taught him. But he must have prayed inwardly, for when he lay down he fell asleep, and he woke up the next morning a changed and better man. He no longer thought of war and wealth and power, but considered how he could make his people happy.

"Oh, if only I had my little shepherdess to help me," he exclaimed, "how much good I could do!"

He at once sent his messengers out to find the little girl, but none of them was able to discover where she was. The king was greatly disappointed; but

having learned to pray, he was able to sleep, and he soon recovered the strength and beauty of his youth. Under his mild and skilful rule, his people became happy, and one day a beautiful young lady entered his palace, and said to him, with a winning smile :

"Have you forgotten me? I am the little shepherdess."

"I knew you at once, my darling," said he. "I have been longing for you to come and claim your share of my kingdom. Oh, if only you would be queen and help me to make my people happy!"

"That is just what I should like to do," she replied. "But you will let my mother live in the palace with me, won't you? It was she who taught me how to cure you, by saying to me every night: 'Don't forget to say your prayers, my child, if you wish to sleep in peace and have happy and pleasant dreams.'"

Then the little shepherdess and the great king were married, and there was great rejoicing through the land.

THE LOVE THAT WAS WORTH NOTHING

KING FRANCIS of Germany sat one day in his lion garden, waiting for the animals to come in and fight. All round him were the nobles and ladies of his court.

The king nodded his head. A gateway opened below, and a great tawny lion sprang into the ring. Looking round, and lashing its tail, it laid itself down in the centre.

The king nodded again. A second gateway was opened, and a magnificent tiger appeared, and roared when it saw the lion. After prowling hungrily round the ring for a while it laid itself down, a little way from the lion.

Again the king nodded. Two leopards rushed out and sprang upon the tiger, who knocked them away with one pat of its great paw. For a while the whole air was filled with their roaring. Then it died away as the leopards slunk off to a far corner of the ring, awaiting a better chance of springing upon the tiger.

As the nobles held their breath waiting for the fighting, suddenly a little glove

fell from one of the balconies, right between the lion and the tiger. A noble's beautiful daughter turned to the knight beside her.

"Now, Sir Knight," she said laughingly, "if your love is as strong as you are for ever telling me it is, bring me back my glove."



SUDDENLY A LITTLE GLOVE FELL

The knight looked at her. Then, almost before anyone knew what had happened, he sprang from the balcony, and quick as lightning had the glove in his hands. The animals sprang to their feet, but they were too late.

A cheer went up, and everyone crowded round to praise him and to see him present the lady with her glove. She

could not refuse to give herself to him in marriage, they thought, after he had done such a brave deed for her.

The knight bowed very low.

"If for your pleasure you can expose me to such unnecessary danger," he said, "I neither value your love nor want it."

And he threw the glove straight in her face, and left her presence for ever.

STORIES FROM THE CHINESE

It is the ambition of every family in China to have at least one boy who shall distinguish himself in the examinations through which their public officials are chosen, and Chinese story-books are full of interesting tales of the cleverness and perseverance of studious boys.

THE BIG JAR OF WATER

A LITTLE boy named Kwang, who was very clever because he always paid attention to his lessons and tried to understand everything that came in his way, was playing with some other children, when one of them fell into a large earthenware jar full of water. The vessel was a tall one, and none of the children could reach their comrade, who would certainly have been drowned had it not been for the wisdom of Kwang. He knew that anyone trying to save the boy through the mouth of the jar would not only be unsuccessful, but would probably himself fall in, and be drowned. So Kwang took up a large stone lying on the ground, and throwing it at the earthenware jar with all his might, broke the vessel. The water at once ran out, and the little boy was saved.

THE BALL IN THE HOLLOW POST

IN a little village lived a boy named Yenfoh, who was very bright and clever, and always knew what to do in difficult circumstances. One day, while he was playing at ball with some companions, the ball struck the top of a hollow post, and then fell to the bottom inside, quite out of reach of the children. All of them, with the exception of Yenfoh, thought the ball was lost. But he knew what to do. He ran to the village well and drew a pail of water. Then, bringing this to the hollow post while the other children looked on in wonder, Yenfoh poured the water in, and the ball floated to the top, where it could be reached.

THE BOY WHO FOUND LIGHT

IN the country parts of China the people are very poor—so poor that they are unable to have a light after dark, and simply have to go to bed. A boy named Kang, who was studying for the examinations, found that if he was to succeed he could not waste all the hours of darkness. His family, however, were too poor to buy oil, so what was he to do? A heavy fall of snow had taken place, and Kang suddenly remembered that white reflects light; so going out

and sitting upon the cold ground, he held his book so that the light from the snow shone upon the page. This he did all through the winter. But at last summer came, and at the same time the snow went. What could poor Kang do now? He remembered that glow-worms give a tiny light, and so he collected a large number of these little creatures, and by the light which they gave was able to continue his studies far into the night. Kang became a mandarin of high rank.

THE BOY WHO HAD NO PAPER

A LITTLE boy who had the misfortune to lose his father when he was only four years old wanted to study for the examinations; but his mother lived in great poverty, and was quite unable to buy paper or pen and ink for him. The little boy, whose name was Yang-su, was greatly distressed at this, and for some time did not know what to do. He certainly could not study if he was unable to write, and how could he write if he had no paper? But it was soon proved in the case of Yang-su that where there is a will there is a way. The boy lived near the seashore, and going down to the beach he took with him a branch of a tree, and with it wrote down words and worked out his problems upon the sand.

THE SLEEPY STUDENT

IN the province of Tsu lived a boy who was very anxious to distinguish himself in the examinations, and thus to bring honor to his parents and his native village. But he found that, after he had been studying for some hours, he began to get very drowsy, and his head would nod until finally he fell asleep. This distressed him very much, and for some time he did not know what to do to keep awake. At last he thought of a way of doing this. He tied a cord to the end of his pigtail, and then fastened this to a beam in the roof, so that when he slept and his head began to nod, the pull of the pigtail at once roused him up again.

THE WEB OF CLOTH

MENCIUS was only three years old when he lost his father, but his mother worked very hard so that her son might have a good education. She sent him to school, and at first Mencius liked going; but he soon slackened in his studies, and at last, throwing aside his books, he left the school and went home.

His mother was weaving a piece of cloth into which she had put a great deal of hard work, and which was worth a large sum of money. As soon as she saw Mencius walk into the house, she took up a knife and cut the web of cloth from top to bottom, utterly spoiling it.

"My son," she said, "you are not half so sorry to see me cut this web of cloth as I am to see you leaving your studies."

Mencius was so moved by this action of his mother that he went back to school at once and always studied very hard.

THE HOLE IN THE WALL

A POOR boy named Kwang Hung was very fond of books; and loved to study; but his poverty prevented him from being able to purchase oil for his lamp, and he had no light. He worked

for a magistrate, who at Kwang Hung's own request paid him in books instead of money, and no one was ever more delighted with his wages. Yet the books were of little use to the boy, for he was too poor to buy oil for a lamp at night.

At last he thought of an idea. His next-door neighbor had lights, and so Kwang Hung made a little hole in the wall, and by moving his book backwards and forwards in front of the hole he caught the light that came through the hole, and was able to go on with his studies.

When the examinations were held he went up with others, and so distinguished himself that his case was brought before the emperor, who gave him a high appointment, and finally Kwang Hung became Prime Minister of the Chinese Empire.

THE ROSY APPLE

IT was a cold winter afternoon, and snow covered the whole town in a mantle of white. The great cathedral clock tolled five, and a little ragged urchin, cowering in the shelter of the door, gazed up at the big tower, and wondered what the bell must look like. But the cold wind blew so cruelly among his rags that he shrank back into the doorway again, glad of any shelter from the biting cold.

At this moment the great doors were thrown open, and Hans, who was a little German boy, and lived in Strassburg, knew that men and women would now come to the church to pray.

He had often peeped in wonder through the doors, and had seen in the distance the pretty glittering candles, the beautiful figure of the Mother of Jesus, and the white-robed priests kneeling at the altar.

Then, too, he had heard the organ and the voices of the choir, and they never failed to fill him with a great wonderment and a longing to learn more about it all. If only his clothes had been a little less torn he would have dared to venture in, for he had often seen poor people enter the cathedral; but, alas! he was clothed in rags, and he had not even a cap on his head or boots on his feet.

So he stood in the corner by the door, and watched the people pass in, as he had often done before.

Many of the ladies had long fur coats, and nearly all the men had big, warm collars and mufflers. Hans wondered

what it would be like to have thick clothes, and not to feel a little bit cold or hungry. Poor little chap, he could not imagine that, for his limbs ached with cold, and he had scarcely eaten for two days. As he was watching the crowd, a beautiful carriage drew up, and Hans saw a little girl, who was seated in it, look at him, and then turn and speak to a lady who was with her. The lady handed her something from a basket, and then the coachman opened the door and they both stepped out.

Oh, how beautiful they were, and especially the dear little girl! Poor Hans opened his eyes in astonishment, and almost thought that she must be a fairy. Her coat was of pretty white fur, and she had a little cap and muff of the same material. Around her face fell golden curls, and on her little feet and legs she wore white boots and gaiters.

As they came up the steps, Hans saw that in her hands she carried a big, rosy apple; but when they reached the top he could hardly believe what he saw, for the little maid ran up to him, and, holding it out, said:

"Here, little boy, would you like this apple?" And then, before he had time to speak, she ran after the lady, and he was left standing with the apple in his hands!

He was so astonished that he sprang forward and gazed after the two as they went into the cathedral, and there he saw the little girl kneel down by the side of her mother, as the priests began to pray.

For a long time he stood there, and once more longed with all his little heart to go in and kneel, as he saw others doing.

It was very quiet at the back of the church, and Hans at last ventured just inside the dimly-lighted porch. He stood there a few moments, until he could resist no longer; then he suddenly shot forward and knelt down quickly against one of the chairs. He shut his little eyes and kept quite still, until at last he heard the organ begin to play, and saw that all the people were standing up.

Oh, how he listened and watched as the service went on! And as he heard the

that he had in the world—his next meal and the only thing which had given him pleasure for ever so long. It would be hard to let it go, but he was full of a great longing, and his one fear was whether his offering was good enough.

He hugged it closely to his heart, and grew more and more excited; and then, when the priest at length drew near, he rose from his chair, and, with a frightened, happy sigh, he placed his rosy apple on the big golden plate. He thought with delight how pretty and red it looked among all the coins, and he watched eagerly as the priest carried it away. As



HE COULD HARDLY BELIEVE HIS EYES, FOR SHE RAN UP TO HIM AND HELD OUT THE APPLE beautiful music his heart felt as if it were growing bigger and bigger, and he longed to cry, and yet at the same time he knew that he was strangely happy.

Then he saw that one of the priests was moving about the church with a golden plate in his hand, and as he held it before the people they placed money on it. Poor Hans! How he longed that he might put money on the plate, too! And as he longed an idea came to him—why not give his rosy apple to the good God to whom the priests were praying?

Hans did not know much about God, but he *did* know that his apple was all

he drew near the altar, all the people bowed their heads, while the priest lifted the plate high, and prayed that God would accept the gifts of His people.

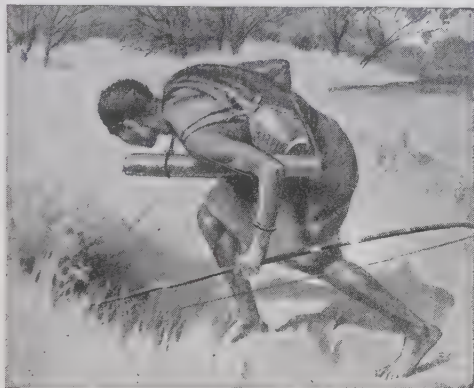
Now, as he did this, a wonderful thing happened. The pretty rosy apple, which a moment before had been held so tightly in Hans' little fingers, was turned, as the priest prayed, into pure, shining gold, and into the little boy's heart there swept a big joy that was never to leave it. His face was wreathed with glad smiles, and he was full of happiness. Of all the gifts laid on the plate, the little rosy apple was the greatest in the sight of the great God.

STORIES TOLD TO KAFFIR CHILDREN

The little Kaffir boys and girls who live in the native villages of South Africa do not know any of our fairy tales ; they have never heard of Cinderella or Little Red Riding Hood. But in the evening, squatting round the fires that blaze outside their huts, their mothers tell them tales like these stories, and they become silent and attentive.

UNCAMA'S ADVENTURE

UNCAMA was a bold hunter, and finding that a strange animal came every night to his garden and rooted up his plants, he lay in wait for it, and pursued it. The strange animal ran



UNCAMA FOLLOWED IT DOWN THE HOLE

down a great hole by the side of the river, and Uncama followed it, and entered a wonderful country underneath the earth.

The strange animal then disappeared, but Uncama went on until he came to a village in which a tribe of savage dwarfs lived. The dwarfs were very fierce, and gathered together to make an attack ; but Uncama got away, and climbed up the hole back to his own country.

But when he returned to his people no one recognized him.

"Where is the wife of Uncama?" he said. "I have a message for her."

"Uncama? Uncama?" exclaimed the people. "Wasn't that the man who disappeared many years ago? His wife is now a very old woman."

So, indeed, she was ; and for some time she did not know Uncama. The hunter was now a younger man than even the baby son whom he had left in his wife's arms when he followed the animal down the hole into the underground country.

THE JACKAL AND THE LION

ONE very hot summer all the streams dried up, and the animals had no water to drink. After searching for some days they found a spring, but hardly any

water came from it, as the hole had not been dug deep enough in the earth.

"Let us all set to work and dig out a big hole," said the lion, "so that we can get plenty of water to drink."

The jackal was lazy, and refused to work with the other animals. So, when they had dug the spring out, they said :

"We must now guard our fountain, and keep the jackal from drinking any of our water, since he refused to work."

"I'll watch over it," roared the lion, "and if I set my eyes on that rascal of a jackal, I'll eat him up."

Some time afterwards the jackal came bounding gaily up to the spring. But, instead of trying to drink the water, he sat down near the lion and pulled from a bag a luscious piece of honeycomb.

"You see, Mr. Lion," he said, as he munched the honeycomb, "I am not at all thirsty. This honey is really lovely."



"LET US ALL SET TO WORK," SAID THE LION

"Just give me a taste," said the lion.

The jackal gave him a very little bit.

"Oh, it is very good!" said the lion.

"Do give me some more, my friend."

"To get the full flavor," said the

jackal, "you must lie on your back, and let me pour it down your throat."

The lion at once fell on his back, and began to wave his great shaggy paws in delight at the fine feast in store for him.



HE TIED UP THE LION'S PAWS WITH ROPE

"I am afraid you will hurt me with those great paws of yours," said the jackal. "Let me tie them up, and then I can lean over you and pour the honey down safely."

The lion allowed him to tie up his four paws with pieces of strong rope. But instead of giving him any of the honey, the jackal trotted to the spring and drank his fill of the water. As he was merrily running off home, the lion roared out: "Mr. Jackal! Dear Mr. Jackal, don't leave me lying helpless here with my feet tied up. All the other animals will laugh at me, and I shall lose my authority over them. On the honor of a lion, I will let you have as much water as you like if only you will set me free."

The jackal reflected for a few minutes. If he did not unbind the lion someone else would, and the king of beasts then would never rest until he had avenged himself. It was better to trust in his honor. So the jackal set the lion free and gave him some of his honey, and the lion ordered all the other animals to allow the jackal always to drink at the new spring which had been made.

THE JACKAL'S TRICK

AFTER the jackal and the lion became friends they often used to go out hunting together. But, fearing that their friendship would not last very long, the jackal left his den and made a house for his wife and children on the top of a very high rock. This he used to climb up by means of a long rope, which his wife let down for him when he arrived from his travels and gave the necessary signal.

The lion, of course, always took a lion's share of everything that he and the jackal captured. This sometimes made the jackal angry, especially when he discovered the game and tracked it down, and the lion merely came and killed it. And the lion got so lazy that he would not even take the trouble to carry home his share.

"Take all the best parts to my lair," he used to say, "and then you can come back and have the worst parts for yourself."

The jackal resolved to pay the lion out for this. And one day, when they had brought down a splendid lot of game, the jackal took all of it home to his own wife. The next morning the angry lion came to the foot of the rock, and said:

"Just throw down your rope. I want to come up and have a friendly talk."



THE JACKAL BECAME VERY ANGRY

The jackal's wife and children were all very frightened when they heard the lion's voice, and they began to tremble, for they knew their fate if the lion came up. But the cunning jackal had thought out what he would do. Calling out to the lion that he would lower a rope, he let down a piece of weak cord, which broke in the middle just as the lion had got half-way up, and down fell the lion and was killed on the rocks.



SHAKESPEARE

The Book of MEN & WOMEN

MILTON



GREAT WRITERS OF SHAKESPEARE'S TIME

WHEN you go to Italy and visit Turin, you will stand on a hill outside the city—a hill crowned by the burying-place of the Italian kings—and you will see far off, arching you round, a great half-circle of snowy Alps. Here and there the ring of mountains sinks almost to a gap; then rises into a peak; sinks again to a level bank of whiteness; from which, presently, it sweeps up and up into a huge icy pyramid that seems to pierce the very heavens. After that it falls lower for a distance, but rises farther on into quite a cluster of mountain-tops, and so goes circling round, now higher, now lower, though never again so high as the sovereign peak of ice and light.

The risings and declinings of English literature, judged by the best books, resemble that irregular mountain ring, in which distances between the peaks are spaces of time.

Far off this panorama begins, with dimly-seen prominences like the Saxon Caedmon. Then there is a long, low dip representing five hundred years, before the sky-line swells up into the first peak that can be called high, and that is well within our range of sight. That first commanding mountain stands for Chaucer. Now follows another decline, representing two hundred years; but as the range goes on it begins to rise and rise, and, ever rising, climbs at last to the loftiest of all the heights

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of literature—the sky-piercing summit of mankind's thought.

That is Shakespeare.

The length of time to be represented after Shakespeare is only three hundred years, and it has been filled with a glittering cluster of lofty mountain forms, none, however, approaching the height and majesty and grace of the Shakespearian eminence.

Two hundred years after Chaucer had founded modern English book-writing—that is, by the year 1600—our language had attained a glory unsurpassed. How was that rapid and wondrous growth brought about after so many barren centuries?

Glancing broadly over the world's history, we can see there have been periods when the human race has seemed to be worn out, stale, joyless, timid, with no fresh thought bounding towards hope and happiness. And then a period has followed when some part of mankind has been inspired by a new life, and has rushed the old world forward again, thrilling with fine feeling and eager expectation. It was so in the centuries that followed the life of Jesus. It was so in the century before Shakespeare.

Perhaps no age, unless it be our own, has ever been quite so wonderful as that century before Shakespeare. Great changes came to pass almost at the same time, and acted on each

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JULIUS CAESAR

HERBERT SPENCER

other. The approach of the Turks toward Constantinople drove the ancient learning of Greece and Rome, preserved in Greek and Latin, back to Italy for shelter, and men began to study eagerly the perfect writing of a thousand years before. At the same time printing was invented, and spread swiftly the means and the fashion of study. Immediately afterwards America was discovered, and the energetic began to feel that they were called on to explore not only an old-world history they had forgotten, but a new world for travel, of which they had been unaware. Love of knowledge became a passion.

THE GREAT LOVE OF BOOKS THAT GREW UPON THE PEOPLE

Books were regarded as treasures, and crowds gathered to hear them read. The beautiful English Bible was the sweetest music ever heard on English soil, and the people listened to it gladly, as the precious book was read to them in churches, on the village green, or in the market square. The writings of far-off lands and generations were translated, and the lives of the great men of those days were retold. All the history and the tales that could be gleaned from the past were worked up into plays, and were watched with unflagging delight by people anxious to feel their new thought and hopeful energy. Admiration of the books that had brought thought from other days led men to wish to write books themselves. Delighting in reading, they began to delight in writing, too, and to hope that through their writings their names might be long remembered.

HOW THE WORLD WAS PREPARED FOR THE COMING OF SHAKESPEARE

How extraordinarily the world was prepared for the coming of this great man we may see by examining a few dates. In the writings of Sir Thomas Wyatt, the Earl of Surrey, and others, Italian forms, such as the sonnet, had been adopted, and English verse had been polished and made varied; and these new forms of poetry were available for any one to study, for the first collection of English poems, by many writers, "Tottel's Miscellany," was published seven years before Shakespeare's birth. The best collection of such early poems, the "Paradise of Dainty Devises," was issued when Shakespeare was twelve years old; Hall's Chronicle,

to which he went for parts of his English history, was printed twenty-two years before his birth; Holinshed's Chronicle appeared when he was thirteen; Stow's Annals when he was sixteen; and Plutarch's Lives, from which the poet took much of his ancient history, was translated when he was fifteen. Thus the materials for his work were ready.

It must not be forgotten that, immediately before Shakespeare began to write, another great poet, Edmund Spenser, had brought into English sweet melody, and "all that might delight a dainty ear." His "Shepherd's Calendar," in which were used "almost all the metrical forms with which later poets have made us familiar," was published when Shakespeare was a lad of fifteen. By Spenser and others, verse had been given tunefulness and ease, and English literature was growing into a

"stately tree,
Wherein the merry birds of every sort
Chanted aloud their cheerful harmony,
And made amongst themselves a sweet
consort."

EDMUND SPENSER, THE FIRST GREAT ENGLISH POET AFTER CHAUCER

Edmund Spenser, the first great English poet after Chaucer's time, was born in London, about the year 1552. His father was a cloth worker, and young Edmund commenced his education at the Merchant Taylors School, under a clever man named Richard Mulcaster, the first Englishman who thought it necessary that there should be a training school for teachers. From this school Spenser went to Cambridge University, where he spent the seven years which at that time seem to have been necessary to take a master's degree. Two or three years after he left the university, he went up to London, the goal of every youthful writer, who sought for fame. There he met and gained the friendship of Sir Philip Sidney, a statesman, poet and soldier, and the model of all that was noble and chivalrous in those buoyant days.

Sidney, who became Spenser's loyal friend, introduced him to his uncle, the great Earl of Leicester. Spenser went to court in the train of that powerful nobleman. He entered for a little while into the gay court life, and then, probably through Leicester's influence, he was made secretary to the Lord Deputy of Ireland. Spenser had already begun

HOW THE BIBLE WAS READ TO THE PEOPLE IN SHAKESPEARE'S TIME



Preaching from the beautiful English version of the Bible at the village cross in Tudor times—From the painting by Mr. G. B. Robertson.

to write poetry, and before he went to Ireland, where he lived for the remainder of his life, he published his "Shepherd's Calendar." In his post of secretary, he proved that a poet could also be a good man of business, and some years later, he was given a more important office in the province of Munster, and received from the queen an estate of three thousand acres and the castle of Kilcolman in the county of Cork. He was not happy in Ireland. He disliked the island and its people, but was somewhat comforted by the occasional companionship of his friend, Sir Walter Raleigh, and occupied his leisure hours in writing. It was at Kilcolman that he wrote the "Faerie Queene," and the tranquil beauty of the country in which he lived seems to have crept into his verses. He paid more than one visit to England, and on one occasion he spent about a year in London; but he returned again to his post in Ireland, and it was there that he met his wife, for whom he wrote the most beautiful of his shorter poems.

The poem by which he is best known is the "Faerie Queene," a tale of enchantment and adventure of which we shall find some stories in another place. The poem is an allegory written in the form of a romance. Under the stories of Una and her lion, St. George and the Dragon, and other persons in the tale, is hidden a picture of the struggle between the virtues and vices. It is a little difficult for us now, but we shall understand as we grow older, and it is enough if at first we read the poem for its story, and for the exquisite music of its verse. It is a book of flitting shadows and the gossamer textures of fancy. Its poetical motion is so soft-footed, and moves so smoothly, as if to the tinkle of elfin bells, that at last it makes us dreamy by its soothing melody. This "poet's poet," as he was called by Charles Lamb, brought unsurpassed grace into our language in the days of its exultant youthful strength. Here is his description of the Bower of Bliss of an enchantress, and its sweet sounds, all harmonized, may serve to illustrate the melody of Spenser's verse, as well as his style and metre.

"Eftsoons they heard a most melodious sound,

Of all that might delight a dainty ear,
Such as at once might not on living ground,
Save in this paradise, be heard elsewhere;

Right hard it was for wight which did it hear

To rede what manner music that might be;
For all that pleasing is to living ear

Was there consorted in one harmony—
Birds, voices, instruments, winds, waters, all agree!

"The joyous birds, shrouded in cheerful shade,

Their notes unto the voice attempted sweet;

Th' angelical soft trembling voices made
To th' instruments divine response mete;

The silver-sounding instruments did meet
With the bass murmur of the water's fall;

The water's fall, with difference discreet,
Now soft, now loud, unto the wind did call;

The gentle warbling wind low answered to all."

Six books only of the poem were published. It is said that two others were written, but the manuscript was lost when his house was burned during a rebellion in Ireland. Afterward, the poet, who was ruined and broken-hearted, was sent to London, but soon died there, and Ben Jonson said that he died in great poverty, before his friends became aware of his condition. Like Chaucer, he was buried in Westminster Abbey, in what has since become the Poet's Corner.

Shakespeare was a youth of sixteen when Spenser went to live in Ireland, and we do not know that the two men ever met during Spenser's visits to London, but it is probable that Shakespeare knew most, if not all, of the other men of whom we shall read in this story. Spenser, however, probably knew Richard Hakluyt, and even if the two men did not meet, they are certain to have heard of one another from Sir Philip Sidney, for they were both his friends.

RICHARD HAKLUYT, WHO WROTE OF
THE ADVENTURES OF HIS TIME

Richard Hakluyt is a man whom we do not often think of among the great writers of Elizabethan times, though it is to him that we owe the best description of the voyages and adventures of those stirring days. He was born, probably in London, about the year 1553, and attended the great school at Westminster. When he was about seventeen he went to Christchurch College in Oxford University, where Sir Philip Sidney had already spent two years, and where the two youths met and became fast friends. Hakluyt, however, stayed on at the university long

after Sidney left it. He took the degree of Master of Arts and entered the church.

His great interest for us is in his work in geography, in which he had been interested in his boyhood by his cousin and namesake, another Richard Hakluyt. After he left the university, he began to lecture on geography and wrote a book on the discovery of America. Later on, he was sent to Paris as chaplain to the English ambassador, and while in Paris he learned all that he could about the discoveries made by the French and

Company, and if he had wished to make the adventurous voyage, he would have been the first clergyman in Virginia. He died in 1616, a few months after Shakespeare, and was buried in Westminster Abbey.

THE INFLUENCE OF THE THEATRE IN SHAKESPEARE'S TIME

In the great days of which we are reading, and to which we owe so much, the theatre meant much more than, for instance, the motion picture theatre means in our own. Hearing and seeing plays was



Edmund Spenser was the herald of a great revival in English poetry. In his poems we see the last traces of the English language as it was written by Chaucer, while he has brought the modern English, soon to blossom in Shakespeare's poetry, within sight of perfection. Spenser at one time of his life experienced good fortune and was a friend of many eminent men, although he died in poverty. In the above picture we are shown the poet in his happiest days, reading some pages from his newly written "Faerie Queene" to Sir Walter Raleigh.

Spanish. After his return to England, he devoted most of his time to the study of geography and discoveries. He wrote many books, the greatest of which is "The Principal Navigations, Voiages, Traffiques and Discoveries of the English Nation."

It is said that he knew all the great sea captains and merchants of his time, and if we could have been present at a gathering of his friends, we should probably have met such great men as Francis Drake, the Howards, the Frobishers and Sir Walter Raleigh.

Hakluyt's influence had much to do with the settlements by the Virginia

not only the recreation of the people; it was what the reading of newspapers and histories, and fiction is to us. The music of the Bible and of the Book of Common Prayer had made the people used to stately and beautiful language, and they listened gladly and with understanding to the lines written by the great dramatic poets.

Spenser, who was not a dramatic poet, never wrote a play, and when he first began to write, the stage did not offer much inducement to a man of his genius and ambition. It was not until he was a young man of about twenty-four, about to leave the university, and Shakespeare

a boy of twelve, "with shining morning face, creeping like snail unwillingly to school," that the first theatre was opened in London. It soon became fashionable, however, and before long, good writers turned their attention to preparing plays for the enjoyment of the gay world of London.

We know the names of several of these writers, but we have time in this story for only the most noted. Of these, the man who comes next in importance to Shakespeare is Christopher Marlowe. Shakespeare owed more to him than to any other man of his time, and the poet Milton also owed Marlowe a great deal.

CHRISTOPHER MARLOWE, FROM WHOM SHAKESPEARE LEARNED MUCH

Christopher, or Kit, Marlowe, who has been called the father of English tragedy, was born the same year as Shakespeare, in Canterbury, where his father was a shoe maker. When he was a boy he went to the King's School in Canterbury, and from that school went with a scholarship to Cambridge University, which the poet Spenser had left just a few years before. After he took his Master's degree, Marlowe went to London, where Shakespeare was making a name for himself as an actor.

In London, he made friends with Sir Walter Raleigh and some of the other well-known scholars and writers of the time. We really know little, however, about the years that he spent there, except that he must have given much of his time to writing plays and poems, and that, because of some of his opinions, he got into trouble with the authorities. In the summer of 1593, he got into a street-row, which was not infrequent in those days. He was fatally injured in the fight, and the man who was one of the great English poets came to a tragic end in his thirtieth year.

His fame has been overshadowed by Shakespeare and Spenser, and his life was cut short before he had shown all that he really could do. Nevertheless, we must count Marlowe among the greatest English dramatists, more especially because no good plays had been written before his time, and he had no one to show him the way. He wrote a great deal of sweet poetry, and a number of historical tragedies. In these tragedies he adopted the use of blank verse, about which we may read on page 102. Ever since his time,

blank verse has been used for dramatic and epic poetry, but we must remember that it was Marlowe who first made it smooth, and fitted it to the beauty and dignity of the English language. His plays often rise to grandeur, and though they are now never acted on the stage, the best of them are counted among the treasures of our great literature. Shakespeare worked with him at first, and learned from him, and it is believed that Marlowe wrote part of Henry VI.

Marlowe's example, in writing plays for the London stage, was followed by an old writer named Robert Greene. Like Marlowe and Spenser, Greene was a graduate of Cambridge University, which he entered the year before Spenser took his degree, and it is just possible that the two men may have met there. After he left the university, he went to London, where he occupied himself in writing. Although he wrote some plays, he is chiefly remembered as a bitter critic and as the writer of stories which are still read by students of life in Tudor times. Through his own fault, Greene had a very unhappy life, and died in great poverty, in his thirty-second year.

MICHAEL DRAYTON, ONE OF SHAKESPEARE'S FRIENDS

A man of whom we can think with greater pleasure is Michael Drayton. He is chiefly famous for his historical poems and ballads, one of which—"The Battle of Agincourt"—you may read in the Book of Poetry. Drayton, who had been page in a great family in his youth, was a favorite at Elizabeth's court. His chief interest for us is the fact that he was probably one of Shakespeare's friends and was certainly a friend of Ben Jonson.

FRANCIS BACON, A GREAT WRITER AND PHILOSOPHER

Another writer of Shakespeare's time whom we must mention, although he was not a poet, is Francis Bacon, who was born in 1560, in London. He went to Cambridge University when he was only twelve years old, and spent three years there. Though he left the university without taking a degree, he was a deep student, and became a great lawyer, a statesman, and a great philosopher, and aimed at making himself master of all knowledge, because, as he said, he thought himself born "to be of advantage to mankind." In 1618, he was made lord chancellor by James I, but a few years

after he was accused of taking bribes. He admitted that he had received gifts from suitors in his court, and was dismissed from his high office and disgraced. Then he went down to his home in the country, and went on with the search after knowledge, which was the real love of his life, and also the cause of his death. He believed that food could be preserved by cold, and one day, when out driving, he stopped his carriage to buy a fowl and stuff it with snow. But he was by this time an old man and not strong, and standing in the snow, he got a chill from the effects of which he did not recover, and died on the 9th of April, 1626.

During his life he wrote many learned books on law, and on philosophy. The books by which he is best known are his Essays, and a philosophical work which he called "Novum Organum," or "A New Method," because he believed he had found a new way of teaching science.

BEAUMONT AND FLETCHER, THEIR FRIENDSHIP AND THEIR PLAYS

Beaumont and Fletcher, who are always spoken of together, were two dramatists who wrote plays together. John Fletcher was the son of a bishop of London, and Francis Beaumont the son of a judge. Each of the poets entered the university at the age of twelve, but Fletcher went to Cambridge, and Beaumont attended Oxford University.

When Fletcher was about sixteen, his father died, leaving his family in great poverty. The boy had to set out to seek his fortune and we know nothing of his life for the next eleven years. It is supposed that he went to London to gain a living by writing. Beaumont, who was about nine years younger than Fletcher, left Oxford, without graduating, to study law in London. Literature, however, had greater attractions for him than law, and in time he too turned to writing. It is thought that Ben Jonson introduced the two poets to each other about the year 1606. Their friendship became as close and beautiful as the friendship of David and Jonathan, and they wrote plays together until Beaumont died about two months before Shakespeare's death. Fletcher died of the plague in 1625.

The plays written by the friends are very fine. It is said that in their own day they were performed oftener than Shakespeare's, but they are not so well suited to our times as the plays written

by that greatest of all the world's great poets.

"O RARE BEN JONSON," LAST OF THE POETS OF SHAKESPEARE'S TIME

Ben Jonson, who bridged the gap between Shakespeare and Milton, had a longer and more adventurous life than any of the other writers of whom we have been reading. He was born in Westminster, in 1573, and as his father died about the same time, he was an orphan from his birth. His mother married again, however, and his stepfather sent him to a good school for boys. From this school he was taken to Westminster School, at the expense of William Camden, a learned scholar, who was one of its masters, and at Westminster he gained not only a sound education, but the habit of study, which made him one of the most learned writers of his day. After he left school, he was sent to learn bricklaying, his stepfather's trade, but soon grew tired of that and went as a soldier to the Netherlands to help to fight against Philip of Spain. After a time he returned to England, and became an actor. Like Shakespeare, he soon began to revise some of the old plays, in which he acted, and before long began to write new ones himself. His genius was not so great as Shakespeare's or even Marlowe's, but he was one of the important writers of his day, and his plays were acted for a long time.

He was rather a quarrelsome man, and was imprisoned once for killing another man in a duel. Later in his life, he was again put in prison on account of something he had written in a play, and once he went to prison with some friends, who had been sent there for something said in a play that he perhaps helped to write. In this he showed both generosity and bravery, for he believed that he ran the risk of having his ears cut off.

He perfected in English the form of entertainment called a masque, which had been introduced from Italy, and of which we may read in the story of Milton. He wrote a number of these masques, as well as comedies, tragedies and many other poems of great beauty and sweetness. He outlived his friend Shakespeare by twenty years, and when he died in 1637 he was buried in Westminster Abbey, where his tomb has the inscription "O, Rare Ben Jonson." He was the last of the great poets of Shakespeare's time.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5579.

THE MAKERS OF THE FLAG*

THIS morning, as I passed into the Land Office, The Flag dropped me a most cordial salutation, and from its rippling folds I heard it say: "Good morning, Mr. Flag Maker."

"I beg your pardon, Old Glory," I said, "aren't you mistaken? I am not the President of the United States, nor a member of Congress, nor even a general in the army. I am only a government clerk."

"I greet you again, Mr. Flag Maker," replied the gay voice; "I know you well. You are the man who worked in the swelter of yesterday straightening out the tangle of that farmer's homestead in Idaho, or perhaps you found the mistake in that Indian contract in Oklahoma, or helped to clear that patent for the hopeful inventor in New York, or pushed the opening of that new ditch in Colorado, or made that mine in Illinois more safe, or brought relief to the old soldier in Wyoming. No matter; whichever one of these beneficent individuals you may happen to be, I give you greeting, Mr. Flag Maker."

I was about to pass on, when The Flag stopped me with these words:

"Yesterday the President spoke a word that made happier the future of ten million peons in Mexico; but that act looms no larger on the flag than the struggle which the boy in Georgia is making to win the Corn Club prize this summer."

"Yesterday the Congress spoke a word which will open the door of Alaska; but a mother in Michigan worked from sunrise until far into the night to give her boy an education. She, too, is making the flag."

"Yesterday we made a new law to prevent financial panics, and yesterday, maybe, a school teacher in Ohio taught his first letters to a boy who will one day write a song that will give cheer to the millions of our race. We are all making the flag."

"But," I said impatiently, "these people were only working!"

Then came a great shout from The Flag:

"The work that we do is the making of the flag."

"I am not the flag; not at all. I am but its shadow."

"I am whatever you make me; nothing more."

"I am your belief in yourself, your dream of what a people may become."

"I live a changing life, a life of moods and passions, of heart-breaks and tired muscles."

"Sometimes I am strong with pride, when men do an honest work, fitting the rails together truly."

"Sometimes I droop, for then purpose has gone from me, and cynically I play the coward."

"Sometimes I am loud, garish, and full of that ego that blasts judgment."

"But always I am all that you hope to be and have the courage to try for."

"I am song and fear, struggle and panic, and ennobling hope."

"I am the day's work of the weakest men and the largest dream of the most daring."

"I am the Constitution and the courts, statutes and the statute-makers, soldier and dreadnought, drayman and street sweep, cook, counselor, and clerk."

"I am the battle of yesterday and the mistake of to-morrow."

"I am the mystery of the men who do without knowing why."

"I am the clutch of an idea and the reasoned purpose of resolution."

"I am no more than what you believe me to be and I am all that you believe I can be."

"I am what you make me; nothing more."

"I swing before your eyes as a bright gleam of color, a symbol of yourself, the pictured suggestion of that big thing which makes this nation. My stars and my stripes are your dream and your labors. They are bright with cheer, brilliant with courage, firm with faith, because you have made them so out of your hearts; for you are the makers of the flag, and it is well that you glory in the making."

* Delivered by Franklin K. Lane, Secretary of the Interior, on Flag Day, 1914, before the employees of the Department of the Interior, Washington, D. C.

By special permission of the Secretary.

The Book of THE UNITED STATES



The Aviation Squad of the New York Police Department.

THE STORY OF THE AMERICAN FLAG

LONG before men had learned to build houses and churches and cities, and long before they knew anything about how to manufacture the bunting and silk of which our flags are made to-day, they used the skins of animals fastened to a long pole to show the tribe or band to which they belonged, and to signal to one another. Men traveling long distances through the forest knew by this whether they were in the presence of friends or foes.

This was perhaps the first use of a flag. When you go to a football or baseball game between two great universities or colleges, you know at once by the flags and colors displayed by each team to which side they belong, and when the game is won the winning team rejoices more over the honor to its college and its flag than because of any honor or gain to themselves. When the President is cruising or traveling in his yacht, the Mayflower, we know, even at a long distance, that it is the President's yacht, because it flies his ensign from the mainmast. Important work of the army and navy is done by the Signal Corps with a system of flag signals called wigwagging. The Boy Scouts and Camp Fire Girls know how to talk

CONTINUED FROM 5335

to each other in this way. Different flags tell us many different kinds of things, but there is one flag which always tells us the same thing, and that is *the flag of our country*.

Every boy and girl who goes to school in America knows what the "Stars and Stripes," the flag of the United States, means, and what it stands for. It means so much to us that no one in our presence can say a word against it which we do not resent; it means so much that we are willing to fight for it, if necessary, or to die for it, if need be, rather than to see it lie in the dust, or to see any other flag put in its place. It means the *freedom* to do what we believe to be right, no matter what any one else may say or think; and whenever and wherever we see the flag we are proud to remember that we are living in a country which is called by all nations *the land of the free*.

But there are other thoughts which come to us when we see the splendid colors of our flag, the red, white and blue, streaming in the wind. "Red is for courage, zeal, fervency; white is for purity, cleanness of life, and rectitude of conduct; blue is for loyalty, devotion, friendship, justice, and truth.

The star is an ancient symbol of India, Persia and Egypt, and signifies dominion and sovereignty." Even the tassels which hang from it and the fringe which surrounds it have a meaning, for they are symbols of a very early religious rite, and the colors were first used by the Christian Church. But most of all when we see the flag we think of what the men and women of the past have done to uphold its honor and glory and we vow in our hearts that they shall never grow less.

THE FIRST BIRTHDAY OF THE AMERICAN FLAG

When you read the story of your country, you are also reading the story of your flag. You will find on page 993 of this work how the thirteen British Colonies revolted from the Mother Country and became the Thirteen Original States of the United States of America. The first truly American flag was called the "Congress Colors." This ensign was composed of thirteen equal stripes, alternately red and white in color, to signify the Thirteen Original Colonies, and in the upper left hand corner was a small Union Jack, the flag of Great Britain, which showed that the colonies still felt their union with the Mother Country, whose children they were, but children who had grown up into an independence which could not be suppressed by the edicts of an unjust king.

THE ENGLISH FLAG, THE FLAG OF THE COLONIES

The ancient national flag of England was the cross of St. George in red on a white banner. In 1606 it was united with the cross of St. Andrew in "the king's colors." This was the "Union" of Scotland and England, which was not finally established until 1707, and this flag was in use after that period. When Ireland came into the kingdom the cross of St. Patrick was added, in 1801.

Since the United States entered the Great War you have seen the British flag many times. Before that great event it was seldom displayed. The perpendicular red cross is that of St. George, the diagonal white cross that of St. Andrew, and the diagonal red cross that of St. Patrick. The arrangement of the last two shows that they are two crosses and not a red cross on a white ground. These three crosses are called the "Union Jack," though the name is not correct except when flown on a warship.

Although the colonies used the flag of England for one hundred and fifty years, the present "union" was not used by any of the American colonies. In the earliest days of the Revolution each state had its own particular banner, but after the battles of Lexington and Bunker Hill, the Connecticut troops raised the standard showing the arms of that colony. It is said that a flag was unfurled at Bunker Hill bearing the motto, "Come if you dare." In Trumbull's celebrated picture the flag is red, having a white canton with a red cross and a green pine tree. A month after this battle a flag was adopted by Major-General Putnam, bearing on one side the motto, "An appeal to Heaven," and upon the other side a Latin motto, "Qui transtulit sustinet," which means "God, who has brought us here, will sustain us."

THE FIRST FLAG OF AMERICA

The first flag of America, also called the Grand Union Flag, was flown for the first time, December 3, 1775, from the stern of Commodore Hopkins' flagship, the Alfred, one of eight vessels built by the Continental Congress. John Paul Jones, America's greatest naval hero, at that time senior lieutenant, raised the flag with his own hands. Perhaps it was at that proud moment that he exclaimed, "That Flag and I are twins. We cannot be parted in life or in death. So long as we can float, we shall float together; if we must sink, we shall go down as one." From the mast of the ship Commodore Hopkins hoisted a flag of yellow silk with a coiled rattlesnake and the warning, "Don't Tread on Me." This was called the Gadsden flag because it was presented to Congress by Christopher Gadsden, a delegate to the Continental Congress from South Carolina.

Another rattlesnake flag is described by an English writer: "A separate flag has lately appeared in our seas bearing a pine tree with the portraiture of a rattlesnake coiled up at its roots with this daring motto: 'Don't tread on me.' We learn that vessels bearing this flag have a sort of commission from a society of people at Philadelphia, calling themselves The Continental Congress." This was a Massachusetts flag, and was flown by the vessels of the navy of that state. At least three other flags showing a rattlesnake were used about that time.

THE FIRST FLAG RESOLUTION

On a wonderful day for the Continental Army, January 2, 1776, the "Congress Colors" was raised in Cambridge, Mass., and was used as the standard of the Colonies until replaced by the "Star-Spangled Banner," which differed from it by having in place of the combined crosses a circle of thirteen white stars on a dark blue field. On the first real birthday of the Stars and Stripes, June 14, 1777, the Continental Congress passed the following resolution:

"Resolved: That the flag of the thirteen United States be thirteen stripes alternate red and white; that the union be thirteen stars, white in a blue field, representing a new constellation."

It was just at this time that Paul Jones was placed in command of the *Ranger*, and received his commission to bear to France the news of the surrender of Burgoyne. The flag which was flown from the staff of the vessel was made with great excitement and rejoicing, by a group of the girls of Portsmouth, out of their silken gowns. When the little fleet arrived in French waters Admiral La Motte Picquet gave this flag the salute which France accorded to all other republics, which was the first recognition of American independence by any foreign power.

THE MAKERS OF THE FIRST AMERICAN FLAGS

There are many stories as to who was the designer of the first American flag, in which the names of Francis Hopkinson and Captain Paul Jones are mentioned. A commission of three was appointed, consisting of General Washington, Robert Morris and Colonel Ross, to decide upon our national flag. We are told that they consulted with Mistress Ross, a flagmaker who lived in Philadelphia, and that benefiting by her suggestions, the flag was made from a drawing handed to her by General Washington. The story of Mrs. Betsy Ross is interesting. It is said that she suggested making the stars with five points instead of six, and that she made all the flags for a time. Some students of history do not think that the story is proved, though many people believe all of it.

An interesting account of the making of the first flag, about which there is no doubt, tells of an attack on Fort Stanwix

(later Fort Schuyler, Rome, N. Y.) made by British, August 3, 1777. Two hundred men of the Massachusetts Regiment sent forward to reinforce the garrison brought word of the "flag resolution," and immediately a flag was made, from soldiers' white shirts, the red petticoat of a soldier's wife, and the blue cloak of Captain Abraham Swartwout. This is the first occasion when the Stars and Stripes were fired upon.

WHERE THE IDEA OF THE FLAG CAME FROM

It is not known whether the stars were borrowed from the flag of Rhode Island, or whether the idea was borrowed from the Netherlands. It is natural to suppose that our forefathers may have been influenced by the flag of Holland, to whom they were so much indebted, and it is also quite possible that the stripes and stars upon Washington's own coat of arms may have suggested the stars and stripes of our flag. But the arrangement, in the Navy, was that of the Rhode Island flag, as the thirteen stars were placed so as to form the crosses of St. George and St. Andrew. Beyond a doubt the thirteen stars were unfurled at the Battle of Brandywine; they saw the surrender of Burgoyne; they helped to cheer the patriots in their sufferings around the camp fires at Valley Forge, and they waved triumphant at the surrender of Cornwallis at Yorktown. They looked down on the evacuation of New York and became a part of the glorious later days of the Revolution.

It does not really make much difference where the idea of the flag came from. The stripes were used, as we have seen, long before the stars were adopted, and the stars were on the Rhode Island flag. Perhaps the idea came from Washington's coat of arms, but it seems more likely that the flag simply grew, and that no one person is really responsible.

THE LAST FLAG RESOLUTION

When the new states, Vermont and Kentucky, entered the Union, two new stars and stripes were added to the Flag by act of Congress, to take effect May 1, 1795. The circle was replaced by five stars in three parallel rows. This was the flag which was flying over Fort McHenry at Baltimore twenty years later when the British bombarded it, September 14, 1814. The states admitted after

Kentucky seem not to have been placed upon the flag, and they demanded that they be given a place also.

It was soon discovered that the addition of a new star and stripe for each new state which entered the Union would make the flag too large and awkward, and on April 4, 1818, Congress enacted that the stripes in the flag should be always thirteen in memory of the Thirteen Original Colonies, and that each new state should be represented by a new star added to the Flag on the Fourth of July following the admission of the state to the Union. At the time of the Revolution the Flag had thirteen stars; of the Mexican War, twenty-nine; of the Civil War, thirty-five; of the Spanish-American War, forty-five; and the number to-day is forty-eight.

Each state has its own flag, showing the arms of the state, and it was the state colors under which our troops fought during the Revolution. It was not until the war with Mexico in 1846 that our national standard was regularly carried into battle. Some of the state flags are very attractive, though many are very much alike. Twenty or more states use the seal of the state on a blue ground as their state flag. Unless one looks very clearly it is difficult to tell them apart. Other states use different colors as a background, and still others have different arrangements of stars, stripes and devices. You should know your own state flag.

THE NAMES BY WHICH OUR FLAG IS CALLED

There should not be a child anywhere in the United States who does not know how and when our national song, which gave the name to our flag, The Star-Spangled Banner, came to be written. Francis Scott Key, a statesman and attorney of Maryland, living in Baltimore at the time the British bombarded Fort McHenry, was asked by President Madison to secure the release of a certain Doctor Beans, who was being held on unjust charges. He went on board the *Minden* for this purpose, and was held overnight during the bombardment. In the morning, when he saw the flag was still flying, inspired by the intense feelings of that hour, he wrote the first draft of our national song. Day and night the Star-Spangled Banner still floats over his grave in silent majesty.

But the name which we love best for

our flag is Old Glory, and the man who gave this name was Captain Stephen Driver, who was in command of the *Charles Doggett*, sailing from the port of Salem, Mass. No man loved the flag of the Union more than Captain Driver, and when he first sent it aloft, he christened it "Old Glory," which he called it ever after, so that he came to be spoken of as "Old Glory Driver." During the Civil War this flag was the object of search on the part of his neighbors, and in order to keep it safe the Captain quilted it with his own hands into his bed-comforter. After his death in 1886 it was presented to the Essex Institute of Salem, the same port from which it sailed away so proudly in 1831.

THE USE OF THE COLORS AND THE STANDARDS

The infantry carries the colors and the cavalry the standards. It is easy to see why the mounted troops have the smaller flags, without the cords and tassels which would hamper the men who bear them in going into action. If you have ever been to West Point to see that wonderful review of the cadets, you will remember how the colors are escorted to and from the field by a special color guard. "The Star-Spangled Banner" is played at the raising and lowering of the colors, morning and night. When not in use they are kept at the quarters of the colonel, and when in camp are set up in front of the colonel's tent—the national color or standard on the right. Each regiment has both a national and regimental silk standard or color, and a battalion or squadron has in addition the same flag made of bunting, of a larger size.

A special ceremony is always made of lowering the flag at a military post or in camp. The flag is lowered slowly while the band plays, and all present must stand rigid and show the proper respect until it is gathered up. The flag must not touch the ground as it reaches the bottom of the staff.

Our flag is the oldest national flag in existence. It is older than the flag of Great Britain, adopted in 1801, than the flag of Spain, 1785, than the French tricolor, 1794, than the flag of Portugal, established in 1830, than the flag of the German Empire, 1870. It is older than the Swedish-Norwegian ensign; or the recent flags of the old empires of China and Japan, or the flags of South America.

THE YOUNG CITIZEN AND HIS FLAG

YOU have many times seen the flag of your country hanging from its staff or waving proudly in the breeze. You say that it is your flag, but have you ever stopped to think what it means? Your country's flag! Do you think of it simply as a bit of colored cloth, or do you have for it a deep devotion which you cannot find words to express? Perhaps you have never thought of it at all.

The flag of your country stands for the country itself. We say that the "Stars and Stripes," if you live in the United States, or the Union Jack if you live in Canada, is the symbol of the nation to which you belong. All those who have gone before have helped to make the nation what it is, and hence have helped to make the flag. To the Canadian boys it stands for the whole story of Great Britain, for Wolfe, for the men who made the Dominion, for the brave soldiers who have gone across the seas.

WHAT DOES THE FLAG OF THE UNITED STATES STAND FOR?

The flag of the United States stands for the first settlers who left their homes and came across the seas. It stands for the hardships of Jamestown and Plymouth; it stands for the hardy pioneers who climbed the Alleghanies and began to conquer the boundless West; it stands for the Declaration of Independence; it stands for Concord and Lexington, Valley Forge and Yorktown; it stands for all those who died to make this land free. All the blood and treasure which have been poured out to make this a land of liberty and opportunity are a part of this flag.

The flag means the nation which guards and protects you. Perhaps you have never thought that you have anything to do with the nation. Perhaps it always seemed far away. The policemen, the firemen, and the street cleaners, you see almost every day, and you may have thought of them as all of the government. They are a part of the city or town, but they are not all, even of that. The city, the town and the county are parts of the state, and the state is a part of the nation, and the nation means more than a few officers. The nation means all those we have already mentioned, and more even than the people who have gone before.

WHAT DO WE REALLY MEAN BY THE NATION?

The nation is all the people of your country acting together. It is not something far above you, which you must obey, and with which you have nothing to do. The nation is you, your father and your mother, the people around you, and the people far away, who live under the flag and love it. All these make up the nation as it is to-day, and it is what it is because of them and because of those who have gone before.

Have you ever thought how impossible it would be for you to live alone, how difficult and inconvenient it would be if your own family lived apart from every one else? You would have to do without most of the things which make life pleasant. Your family could not build roads and bridges, could not keep up schools, and could not protect itself from any wicked men, who might roam through the land, or might come from afar. Only all the people can do that, and we call them, acting together, the nation.

For you policemen walk the streets, firemen are always ready to save you, doctors are trying to make the land healthful, brave soldiers and sailors are guarding the coasts. Thousands of men, and women, too, are working for you, and other young citizens like you, working to make this world a better place for you to live in, working to give you a better opportunity to grow up strong, healthy and wise.

WHY THE AMERICAN FLAG MEANS SO MUCH

All of these are a part of what the flag means. It is a flag which floats over a free nation, where the will of the citizens is the law of the land. In some countries the flag is the flag of a few who enjoy the good things of life, while the great majority must live without opportunity. Here the poorest boy may rise to the highest position in the nation. No law will keep him down. No law will interfere with his religion. No one will decide where he must work, and what he must do. The long arm of the government will protect him while he is doing right.

The flag of the United States has brought hope to those who were oppressed. Under that flag, men went forth to free Cuba from tyranny, and

then to free the world from dread. Under it the Filipino, the Hawaiian, the Porto Rican are able to live secure, and the flag will protect you if it takes the whole strength of the nation to drive off those who strive to oppress you.

RIGHTS, PRIVILEGES AND DUTIES ARE ALL CONNECTED

Now every right or privilege carries a duty with it. You say that you have a right to walk along the street without harm, that you have a right to the cap on your head. This is true, but have you ever thought that if it is your right to walk in peace, it is your duty not to interfere with another? If it is your right not to have your cap snatched from you, it is your duty not to snatch the cap of any one else. If a schoolmate allows you to look at one of his books, it is your duty not to tear or deface it. The other side of every right or privilege is a duty, and one who is always demanding his rights, and never thinks of his duties, is either stupid or selfish.

Boys and girls do not always understand this fact, which is at the bottom of all society. They desire every good thing of life, and expect it to come to them, but they forget that they must give in return. They expect their parents, the city, the state, to give them many things, and never think that they owe something to all of these. One who always takes and never gives is not an admirable person. You despise such a boy or girl, if you are unfortunate enough to know one of this sort.

HOW YOU CAN SHOW YOUR LOVE FOR THE FLAG

Then if the nation protects and guards you, it is your duty to conduct yourself properly. Every time you do what you know is wrong, you are dragging the flag of your country in the dust. You are being ungrateful to the nation of which you are a part. By just a little bit you are lowering the standard of the whole nation. You are making the United States just a little worse. You are making it harder for the nation to do the work it must do.

Not doing wrong is not enough. A stump does not do anything that is wrong, but it is not likely to do much that is good, either. A citizen who loves his nation must be on the lookout to do good, and not simply to keep from doing wrong. He must be active all the time

and try to make himself more worthy than he was the year before, or even the week before. If you are to be worthy of the flag you must be a good citizen, and a good citizen is not one who sits still and does nothing. Every one who does not help, hinders, for he is simply a dead load, which those who are trying to carry the nation forward must lift. By lifting, instead of leaning, you can show your love for the flag.

You may say that one person in a hundred million does not matter. This is a very foolish statement. The nation is made up of a hundred million people, to be sure, and many of them are boys and girls like you. If every boy or girl had the same ideas and grew up into a selfish, lazy man or woman, what kind of a nation would we have? How long would the United States be one of the leading nations of the world? Soon the world would learn to know that nothing high or noble was to be expected from the United States. It would be a dead nation, with no right to exist upon the earth.

HOW YOU SHOULD BEHAVE TOWARD THE FLAG

Besides showing your love for the flag by your conduct, there are other things you can do. Never fail to salute your country's flag when it is carried past you in a procession, and you can remind any one you see, who is neglecting to take off his hat, that the flag is there. You can take care of the flag at your own home. Do not allow it to get soiled or torn, and never allow it to trail in the dirt. Never place anything on the flag, and never allow any one else to show disrespect for the flag, if you can help it. Be polite, of course, but protest vigorously if any one is abusing it. Tell the person who is doing this, some of the things we have told you here. Perhaps he or she is only thoughtless and does not really mean to show disrespect. Few people would be willing to do this if they only thought a moment.

Think of your flag as the symbol of your nation. Show reverence for the flag, because it represents the nation, which has done so much for you and the world. Then when you grow up, and can have a voice in the nation's affairs, you will, I am sure, be a good citizen. In the United States there can be no higher title of honor than this.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5593.

ON SIR PHILIP SIDNEY

SIR PHILIP SIDNEY, who was born in 1554 and died in 1586, from the result of a wound received while fighting in the Netherlands, was one of the most beautiful characters of his time. Although we know him as one of the finest poets of the Elizabethan period, none of his poems was printed during his lifetime, and the fame which he enjoyed in his own day was largely due to his personal character. Whenever we wish to think of a true hero and a Christian gentleman, the name of Sir Philip Sidney is the one that comes most readily to mind. Sir Fulke-Greville was a fellow-poet and comrade of his. He wrote the life of his friend, which was printed in 1652. He was also the author of this poem, in which he so beautifully celebrates the virtues of Sidney.

SILENCE augmenteth
grief, writing in-
creaseth rage,
Stal'd are my thoughts,
which loved and lost, the wonder
of our age;
Yet quickened now with fire, though
dead with frost ere now,
Enraged I write I know not what;
dead quick, I know not how.

CONTINUED FROM 5391



Farewell to you, my
hopes, my wonted
waking dreams!
Farewell sometime en-
joyed joy, eclipsèd are thy
beams!
Farewell, self-pleasin; thoughts, which
quickness brings forth,
And farewell friendship's sacred league
uniting minds of worth.

Hard-hearted minds relent, and Rigour's
tears abound,
And Envy strangely rues his end, in
whom no fault she found;
Knowledge his light hath lost, Valour
hath slain her knight:
Sidney is dead, dead is my friend, dead
is the world's delight.

And farewell, merry heart, the gift of
guiltless minds,
And all sports, which for live's restore,
variety assigns,
Let all that sweet is, void! In me no
mirth may dwell,
Philip the cause of all this woe, my life's
content, farewell!

Place pensive wails his fall, whose presence
was her pride;
Time crieth out, my ebb is come, his life
was my springtide;
Fame mourns in that she lost, the ground
of her reports,
Each living wight laments his lack, and
all in sundry sorts.

Nor rime, the scourge of rage, which art
no kin to skill,
And endless grief which deads my life,
yet knows not how to kill,
Go seek that hapless tomb, which if ye
hap to find,
Salute the stones, that keep the lines, that
held so good a mind.

He was—woe worth that word—to each
well-thinking mind,
A spotless friend, a matchless man, whose
virtue ever shined,
Declaring in his thoughts, his life, and
that he writ,
Highest conceits, longest foresights, and
deepest works of wit.

Now sink of sorrow I, who live, the more
the wrong,
Who wishing death, whom death denies,
whose thread is all too long,
Who tied to wretched life, who look for
no relief,
Must spend my ever-dying days in never-
ending grief.

He only like himself, was second unto
none,
Where death—though life—we rue, and
wrong, and all in vain do moan,
Their loss, not him wail they, that fill the
world with cries,
Death slew not him, but he made death
his ladder to the skies.

Heart's ease and only I, like parallels run
on,
Whose equal length, keep equal breadth,
and never meet in one,
Yet for not wronging him, my thoughts,
my sorrows cell,
Shall not run out, though leak they will,
for liking him so well.

ONLY A BOY

It cannot truly be said that these lines are "poetry." They are poetic in form, they rhyme, but they lack rhythm or beauty of movement. Their merit is that they give a quick and happy outline of a good healthy type of boyhood.

ONLY a boy, with his noise and fun,
The veriest mystery under the sun;
As brimful of mischief, and wit and glee,
As ever a human frame can be,
And as hard to manage as—what? ah, me!
'Tis hard to tell,
Yet we loved him well.

Only a boy with his fearful tread,
Who cannot be driven, must be led.
Who troubles the neighbour's dogs and cats,
And tears more clothes, and spoils more hats,
Loses more kites, and tops, and bats,
Than would stock a store
For a year or more.

Only a boy, with his wild, strange ways,
With his idle hours, or his busy days,
With his queer remarks and his odd replies,
Sometimes foolish and sometimes wise.
Often brilliant for one of his size,
As a meteor hurled
From the planet world.

Only a boy, who will be a man,
If Nature goes on with her first great plan—
If intemperance, or some fatal snare,
Conspire not to rob us of this our heir,
Our blessing, our trouble, our rest, our care,
Our torment, our joy!
Only a boy.

THE BAILIFF'S DAUGHTER

Here we have a well-known and typical old English ballad. The story it tells is of the simplest, for in the days when ballads were popular, people were more simple-minded than they are in our time. It is a quaint and unlikely story, but its simplicity has a charm for us readers of a later day. It is difficult to imagine that the London apprentice let seven long years go by without seeing his sweetheart at Islington! But we must not expect common-sense views of life from these old ballads, which were meant only to entertain.

THERE was a youth, a well-beloved youth,
And he was a squire's son,
He loved the bailiff's daughter dear
That lived in Islington.

Yet she was coy and would not believe
That he did love her so,
No, nor at any time would she
Any countenance to him show.

But when his friends did understand
His fond and foolish mind,
They sent him up to fair London
An apprentice for to bind.

And when he had been seven long years,
And never his love could see:
Many a tear have I shed for her sake,
When she little thought of me.

Then all the maids of Islington
Went forth to sport and play,
All but the bailiff's daughter dear;
She secretly stole away.

She pulled off her gown of green
And put on ragged attire,
And to fair London she would go
Her true love to enquire.

And as she went along the high road,
The weather being hot and dry,
She sat her down upon a green bank,
And her true love came riding by.

She started up, with a colour so red,
Catching hold of his bridle-rein;
"One penny, one penny, kind sir," she said,
"Will ease me of much pain."

"Before I give you one penny, sweetheart,
Pray tell me where you were born."
"At Islington, kind sir," said she,
"Where I have had many a scorn."

"I prythee, sweetheart, then tell to me,
O tell me whether you know,
The bailiff's daughter of Islington."
"She is dead, sir, long ago."

"If she be dead, then take my horse,
My saddle and bridle also;
For I will unto some far country,
Where no man shall me know."

"O stay, O stay, thou goodly youth,
She standeth by thy side;
She is here alive, she is not dead,
And ready to be thy bride."

"O farewell grief, and welcome joy,
Ten thousand times therefore;
For now I have found mine own true love,
Whom I thought I should never see more."

TIME

Sir Walter Scott gives a fine sense of mystery and awe to the grim figure of old Father Time in this little poem. Time is always shown to us an old, old man with an hour-glass and a scythe: the one to suggest the passing of the hours, and the other the reaping of Time's harvest, which means the end of life. Carle is an old-fashioned word, still used in Scotland, to denote an elderly and rather rough sort of man. Originally it meant simply man, and the Saxon name Carl, from which we get Charles, came from it.

"WHY sitt'st thou by that ruined hall,
Thou aged carle so stern and gray?
Dost thou its former pride recall,
Or ponder how it passed away?"

"Know'st thou not me?" the Deep Voice
cried;

"So long enjoyed, so oft misused—
Alternate, in thy fickle pride,
Desired, neglected, and accused!

"Before my breath, like blazing flax,
Man and his marvels pass away!
And changing empires wane and wax,
Are founded, flourish, and decay.

"Redeem mine hours—the space is brief—
While in my glass the sand-grains shiver,
And measureless thy joy or grief,
When Time and thou shalt part for ever!"

ENVOY

An "envoy," from a French word, "envoi," means the verses at the end of a poem, in which some general idea of the poem is summed up and emphasized; the "envoy" is thus the "message" which the poem has "carried"—for "envoyer" in French means "to send"—from the poet to the reader. But we often find tiny poems given this title without any preceding verses. In this case it is meant to suggest the last word on a noble life, and it is a poetical way of saying that the life to which this is the "envoy" had been of itself a poem. The writer of the following is Charlotte Becker.

SAY not, because he did no wondrous deed,
Amassed no worldly gain,
Wrote no great book, revealed no hidden truth,
Perchance he lived in vain.

For there was grief within a thousand hearts
The hour he ceased to live;
He held the love of women, and of men—
Life has no more to give!

THE BAILIFF'S DAUGHTER OF ISLINGTON



SHE PULLED OFF HER GOWN OF GREEN
AND PUT ON RAGGED ATTIRE,

AND TO FAIR LONDON SHE WOULD GO
HER TRUE LOVE TO ENQUIRE.

This picture, illustrating the poem on page 5498, is reproduced, by permission, from the painting by Mr. John Hatherell, R.I.

THE CHILD'S WISH IN JUNE

If the author of these verses is not known to fame and if they are not of any real poetical merit, they at least convey a very pleasing sense of that delightfully lazy month of June. All work and no play, as we are told, makes Jack a dull boy, and even Nature seems to take a rest in June. Midsummer is a good time for us all to do a little idling, to enjoy the bright sunshine, the sweet bird-song, and the lazy drone of the bees.

MOTHER, mother, the winds are at play ;
Prithee, let me be idle to-day ;
Look, dear mother, the flowers all lie
Languidly under the bright blue sky.

See how slowly the streamlet glides ;
Look how the violet roguishly hides ;
Even the butterfly rests on the rose,
And scarcely sips the sweets as he goes.

Poor Tray is asleep in the noonday sun,
And the flies go about him one by one ;
And pussy sits near with a sleepy grace,
Without ever thinking of washing her face.

There flies a bird to a neighboring tree,
And very lazily flieth he ;
And he sits and twitters a gentle note,
That scarcely ruffles his little throat.

You bid me be busy ; but, mother, hear
How the humdrum grasshopper soundeth near ;
And the soft west wind is so light in its play,
It scarcely moves a leaf on the spray.

I wish, oh, I wish I were yonder cloud,
That sails about its misty shroud ;
Books and work I no more should see,
But I'd come and float, dear mother, o'er thee !

THE DUST

In these verses, written by Gertrude Hall, we have a striking reminder that all earthly things return to dust, for it is indeed true that the dust which Betty has to brush away is but the powdered remains of many things which once were beautiful.

IT settles softly on your things,
Impalpable, fine, light, dull, grey ;
Her dingy dust-clout Betty brings,
And, singing, brushes it away.

And it's a queen's robe, once so proud,
And it's the moths fed in its fold ;
It's leaves, and roses, and the shroud
Wherein an ancient saint was rolled.

And it is Beauty's golden hair,
And it is Genius's crown of bay,
And it is lips once warm and fair
That kissed in some forgotten May.

A HUNDRED YEARS TO COME

The poet who sings in the following verses strikes a note of sadness and seems oppressed when he contemplates the passing away of everything that is alive and gay at the present time. It is true that in one hundred years few living creatures of to-day will still exist, but the mighty stream of life will still flow on, and we must give place to others, as others have given place to us, so that the prospect is not one of sadness, but rather one to spur us to our best endeavor while our days shall endure. The author of the poem is C. F. Brown.

WHERE, where will be the birds that sing,
A hundred years to come ?
The flowers that now in beauty spring,
A hundred years to come ?
The rosy lips, the lofty brow,
The heart that beats so gayly now,
Oh, where will be love's beaming eye,
Joy's pleasant smile, and sorrow's sigh,
A hundred years to come ?

Who'll press for gold this crowded street,
A hundred years to come ?
Who'll tread yon church with willing feet,
A hundred years to come ?
Pale, trembling age, and fiery youth,
And childhood with its brow of truth ;
The rich and poor, on land and sea,
Where will the mighty millions be,
A hundred years to come ?

We all within our graves shall sleep,
A hundred years to come ;
No living soul for us will weep,
A hundred years to come ;
But other men our lands shall till,
And others, then, these streets will fill,
And other birds will sing as gay,
And bright the sun shine as to-day,
A hundred years to come.

BETTER THINGS

Several of George MacDonald's poems have already appeared in our pages, and we always find him praising the virtue of humility, the delight in simple things. In the following verses he celebrates those "better things" which many of us are apt foolishly to despise in our search after the vanities of life. In every line the choice and the contrast are shown.

BBETTER to smell the violet cool, than sip the
glowing wine ;
Better to hark a hidden brook, than watch a
diamond shine.

Better the love of a gentle heart, than beauty's
favour proud ;
Better the rose's living seed, than roses in a
crowd.

Better to love in loneliness, than to bask in love
all day ;
Better the fountain in the heart, than the
fountain by the way.

Better be fed by a mother's hand, than eat
alone at will ;
Better to trust in God, than say : " My goods
my storehouse fill."

Better to be a little wise, than in knowledge
to abound ;
Better to teach a child, than toil to fill perfec-
tion's round.

Better to sit at a master's feet, than thrill a
listening State ;
Better suspect that thou art proud, than be
sure that thou art great.

Better to walk the real unseen, than watch the
hour's event ;
Better the " Well done ! " at the last, than
the air with shouting rent.

Better to have a quiet grief, than a hurrying
delight ;
Better the twilight of the dawn, than the
noonday burning bright.

Better a death when work is done, than earth's
most favoured birth ;
Better a child in God's great house, than the
king of all the earth.

LOVE'S REASONINGS

Charles Mackay, an English poet of some note in the last century, sings here in very simple strains the praise of bird-music, that unfailing source of inspiration to the poets. Every year the birds sing the same song, but it always delights the ear and never grows old, for love lasts always.

WHAT is the meaning of thy song,
That rings so clear and loud,
Thou nightingale, amid the copse—
Thou lark above the cloud?
What says thy song, thou joyous thrush,
Up in the walnut-tree?
"I love my love, because I know
My love loves me."

What is the meaning of thy thought,
O maiden fair and young?
There is such pleasure in thine eyes,
Such music on thy tongue;
There is such glory in thy face,
What can the meaning be?
"I love my love, because I know
My love loves me."

Oh, happy words! at Beauty's feet
We sing them ere our prime,
And when the early summers pass,
And care comes on with time,
Still be it ours, in care's despite,
To join the chorus free:
"I love my love, because I know
My love loves me."

TWO MEN

The point of this little poem is, of course, as old as the oldest of lessons which knowledge teaches man. The first thing any man can have realized was that death leveled all worldly distinctions. The writer of the poem is Charles Noble Gregory.

ONE was a king, and wide domain
He ruled as his sires had done;
A wooden hovel, a bed of pain
Belonged to the other one.

The king was ill and the world was sad—
But the monarch languished, the monarch died;
The beggar was sick unto death, but he had
No one to watch at his low bedside.

Then under the minster the king was laid,
While o'er him the marbles were piled;
But a shallow grave in the fields was made,
By careless hands, for poverty's child.

But now there are those who profoundly
declare
If you opened the tomb and the grave,
You could not distinguish, whatever your
care,
The dust of the king and the slave.

WHY IT WAS COLD IN MAY

This pleasant little piece of fanciful verse about the days was written by an American lady named Henrietta Robins Eliot.

THE Year had all the Days in charge,
And promised them that they
Should each one see the World in turn,
But ten Days ran away!
Ten Days that should have gone abroad
Some time in early May;
So when May came, and all was fair,
These Days were sent to bed,
And ten good Winter Days were sent
To see the World instead!

THE POET AND THE BIRD

Elizabeth Barrett Browning, who died in the year 1861, one of the greatest of women-poets that the nineteenth century produced, points a moral in this little fable. The natural music of the singing birds is among the rarest delights of our senses, and one of the loveliest things in Nature, but the song of the poet springs from the depths of the heart, and endures for ever, whereas the song of a bird is of the things that perish.

SAID a people to a poet: "Go out from
among us straightway!
While we are thinking earthly things, thou
singing of divine.
There's a little, fair, brown nightingale who,
sitting in the gateway,
Makes fitter music to our ear than any song
of thine!"

The poet went out weeping—the nightingale
ceased chanting:
"Now, wherefore, oh, thou nightingale, is
all thy sweetness done?"
"I cannot sing my earthly things, the heavenly
poet wanting,
Whose highest harmony includes the lowest
under sun."

The poet went out weeping, and died abroad,
bereft there;
The bird flew to his grove, and died amid
a thousand wails!
Yet when I last came by the place, I swear
the music left there
Was only of the poet's song, and not the
nightingale's!

WHAT DOES IT MATTER?

The writer of the following lines voices an eloquent plea for good conduct, and reminds us that it is not by the amount of this world's wealth in money or possessions that we may inherit from others or acquire by our own efforts, not by our seeming success or failure, that we are to be judged, but by what we think and do, and our efforts to lead an upright and useful life. These are among the things that matter much.

IT matters little where I was born,
Or if my parents were rich or poor,
Whether they shrank from the cold world's
scorn
Or walked in the pride of wealth secure;
But whether I live an honest man,
And hold my integrity firm in my clutch,
I tell you, my brother, as plain as I can,
It matters much!

It matters little how long I stay
In a world of sorrow, sin, and care;
Whether in youth I am called away,
Or live till my bones of flesh are bare;
But whether I do the best I can
To soften the weight of adversity's touch
On the faded cheek of my fellow-man,
It matters much!

It matters little where be my grave,
If on the land, or in the sea;
By purling brook, 'neath stormy wave,
It matters little or nought to me;
But whether the angel of death comes down
And marks my brow with a loving touch,
As one that shall wear the victor's crown,
It matters much!

TO A SKYLARK

We have already read, in our book, Wordsworth's poem, "To the Skylark," and here is another poem by the same writer, in which he expresses not the general feelings of a poet awakened by the skylark's song, but recalls the emotion of some particular occasion when he had listened to a skylark. It is interesting and instructive to notice this difference between the poet's addressing "The Skylark" and "A Skylark," for a very important distinction is here observed.

UP with me! up with me into the clouds!
 For thy song, Lark, is strong;
 Up with me! up with me into the clouds!
 Singing, singing,
 With clouds and sky about thee ringing,
 Lift me, guide me, till I find
 That spot which seems so to thy mind!
 I have walked through wildernesses dreary,
 And to-day my heart is weary;
 Had I now the wings of a faery,
 Up to thee would I fly.
 There's madness about thee, and joy divine
 In that song of thine;
 Lift me, guide me high, and high,
 To thy banqueting-place in the sky.

Joyous as morning,
 Thou art laughing and scorning;
 Thou hast a nest for thy love and thy rest,
 And, though little troubled with sloth,
 Drunken Lark! thou wouldst be loth
 To be such a traveller as I.
 Happy, happy liver,
 With a soul as strong as a mountain river,
 Pouring out praise to the Almighty Giver!
 Joy and jollity be with us both!

Alas! My journey, rugged and uneven,
 Through prickly moors or dusty ways must wind;
 But, hearing thee, or others of thy kind,
 As full of gladness and as free of heaven,
 I, with my fate contented, will plod on,
 And hope for higher raptures, when life's day
 is done.

RAIN ON THE ROOF

The author of this familiar poem was Coates Kinney, an American writer, well known in his day, who was born in 1826. He was a newspaper editor, and he wrote many poems, but he is best known by this very charming lyric. It cannot be said that he has chosen the best metre, though it does in a way suggest the gentle patter of the rain. The matter of the poem, however, is admirable, as he has seized upon a very familiar experience of Nature and conveyed it truthfully. The falling of rain while we lie abed in a little country cottage has a soothing effect on the mind, and awakens, in some strange way, the tenderest emotions of the heart.

WHEN the humid shadows hover
 Over all the starry spheres,
 And the melancholy darkness
 Gently weeps in rainy tears:
 What a joy to press the pillow
 Of a cottage-chamber bed,
 And to listen to the patter
 Of the soft rain overhead!

Every tinkle on the shingles
 Has an echo in the heart,
 And a thousand dreamy fancies
 Into busy being start;
 And a thousand recollections
 Weave their air-threads into woof,
 As I listen to the patter
 Of the rain upon the roof.

Now in memory comes my mother,
 As she used in years ago,
 To survey her darling dreamers
 Ere she left them till the dawn;

Oh, I see her leaning o'er me,
 As I list to this refrain
 Which is played upon the shingles
 By the patter of the rain.

Then my little seraph sister,
 With her wings and waving hair,
 And her bright-eyed cherub brother—
 A serene, angelic pair—
 Glide around my wakeful pillow,
 With their praise or mild reproof,
 As I listen to the murmur
 Of the soft rain on the roof.

And another comes to thrill me
 With her eyes delicious blue;
 And forget I, gazing on her,
 That her heart was all untrue.
 I remember that I loved her,
 As I ne'er may love again,
 And my heart's quick pulses vibrate
 To the patter of the rain.

Art hath nought of tone or cadence
 That can work with such a spell
 In the soul's mysterious fountains,
 Whence the tears of rapture well,
 As that melody of Nature,
 That subdued, subduing strain,
 Which is played upon the shingles
 By the patter of the rain.

NOW THE DAY IS OVER

The Rev. S. Baring-Gould, who is a famous novelist and writer of books of travel, has also given us several hymns which have long been favorites in all the churches. Who has not sung his inspiring "Onward, Christian Soldiers"? As an evening hymn, giving voice to the simple faith of little children, that which we print below is sung in churches every Sunday wherever our language is spoken. Mr. Baring-Gould, who was born on January 28, 1834, has written some fine stories, such as "Mehalah" and "John Herring," but his beautiful hymns may outlast even his fine stories.

NOW the day is over,
 Night is drawing nigh;
 Shadows of the evening
 Fall across the sky.

Now the darkness gathers,
 Stars begin to peep;
 Birds, and beasts, and flowers,
 Soon will be asleep.

Jesu, give the weary
 Calm and sweet repose;
 With Thy tenderest blessing
 May mine eyelids close.

Grant to little children
 Visions bright of Thee;
 Guard the sailors tossing
 On the deep blue sea.

Comfort every sufferer
 Watching late in pain;
 Those who plan some evil
 From their sin restrain.

Through the long night watches,
 May Thine angels spread
 Their white wings above me,
 Watching round my head.

When the morning wakens,
 Then may I arise,
 Pure and fresh and sinless,
 In Thy holy eyes.

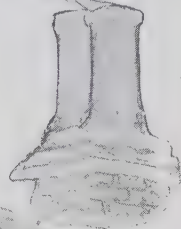
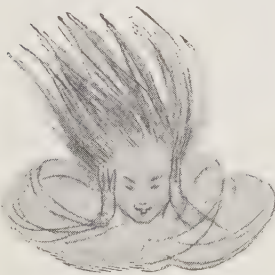
Glory to the Father,
 Glory to the Son,
 And to Thee, Blest Spirit,
 While all ages run.

MY LADY WIND

My Lady Wind, my Lady Wind,
Went round about the house to find
A chink to get her foot in;
She tried the keyhole in the door,
She tried the crevice in the floor,
And drove the chimney soot in.

And then, one night when it was dark,
She blew up such a tiny spark,
That all the house was pothered;
From it she raised up such a flame,
As flamed away to Belting Lane,
And White Cross folks were smothered.

And thus when once, my little dears,
A whisper reaches itching ears,
The same will come, you'll find;
Take my advice, restrain the tongue,
Remember what old nurse has sung
Of busy Lady Wind.



TEENY-WEENY

BY THE AUTHOR OF
"WYNKEN, BLYNKEN, AND NOD."

Eugene Field, who wrote this poem and that on the previous page, was an American author, and one of the kindest-hearted men who ever lived. All the children loved him, and many thousands who only know his poems love him too. He was born in 1850 and died at the end of 1895. His life, which was all too short, was chiefly spent as a busy writer in the Chicago newspapers, but he made his name immortal by his many poems for and about children. No one has excelled him in his work.

EVERY evening, after tea,
Teeny-Weeny comes to me,
And, astride my willing knee,
Plies his lash and rides away ;
Though that palfrey, all too spare,
Finds his burden hard to bear,
Teeny-Weeny doesn't care ;
He commands, and I obey.

First it's trot, and gallop then ;
Now it's back to trot again ;
Teeny-Weeny likes it when
He is riding fierce and fast.
Then his dark eyes brighter grow
And his cheeks are all aglow :
" More ! " he cries, and never " Whoa ! "
Till the horse breaks down at last.

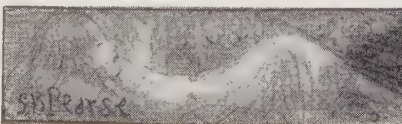
Oh, the strange and lovely sights
Teeny-Weeny sees of nights,
As he makes those famous flights
On that wondrous horse of his !
Oftentimes, before he knows,
Wearylike his eyelids close,
And, still smiling, off he goes
Where the land of By-low is.

There he sees the folk of fay
Hard at ring-a-rosie play,
And he hears those fairies say :
" Come, let's chase him to and fro ! "
But, with a defiant shout,
Teeny puts that host to rout ;
Of this tale I make no doubt,
Every night he tells it so.

So I feel a tender pride
In my boy who dares to ride
That fierce horse of his astride,
Off into those misty lands ;
And, as on my breast he lies,
Dreaming in that wondrous wise,
I caress his folded eyes,
Pat his little dimpled hands.

On a time he went away,
Just a little while to stay,
And I'm not ashamed to say
I was very lonely then ;
Life without him was so sad,
You can fancy I was glad
And made merry when I had
Teeny-Weeny back again.

So of evenings, after tea,
When he toddles up to me
And goes tugging at my knee,
You should hear his palfrey neigh !
You should see him prance and shy
When, with an exulting cry,
Teeny-Weeny, vaulting high,
Plies his lash and rides away !

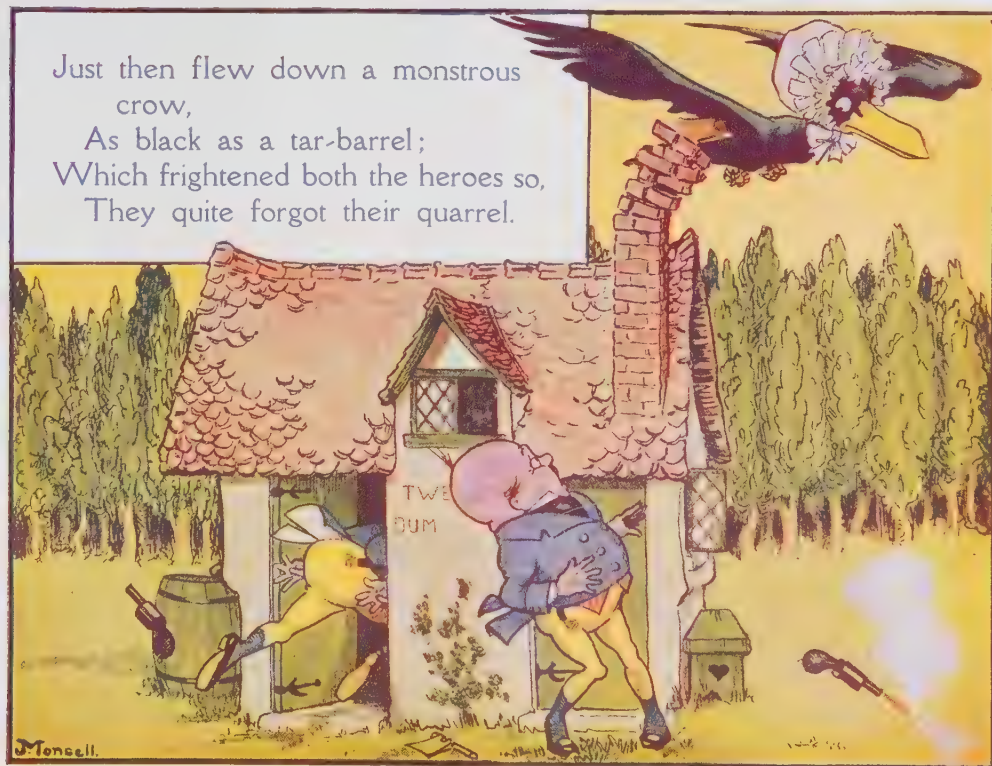


From "With Trumpet and Drum." Copyright 1892, by Mary French Field. Published by Charles Scribner's Sons.

Tweedledum and Tweedledee
Agreed to have a battle;
For Tweedledum said Tweedledee
Had spoiled his nice new rattle.



Just then flew down a monstrous
crow,
As black as a tar-barrel;
Which frightened both the heroes so,
They quite forgot their quarrel.



TWEEDLEDUM AND TWEEDLEDEE



THE FAMOUS DOGS OF ST. BERNARD, THAT SHOW ALMOST HUMAN INTELLIGENCE

HOW ANIMALS TALK TO EACH OTHER

WHEN we think of animals talking to one another, none of us expects them to have a set language such as our own. We know that they do communicate with one another, but it is not by means of words such as we use.

How do we know, then, that they talk? We judge by results. Horse talks to horse, and does his best to make himself understood by man. Dog talks to dog, and, in a hundred different ways, seeks to speak to us. Cats have their own language; the wild beasts of the forest, of the plain, and of the mountain, have their speech; the birds are gifted with a considerable language; and the insects have, perhaps, the most varied language of all. Few of us know even the A B C of the animal language; and this story will not pretend to teach it. We shall, instead, think over things which show that animals do communicate one with another, and we shall try to understand how some of them do so.

With few exceptions, all the higher animals make use of their voices. But we are not to suppose that the speech of animals is confined to the sounds which we ourselves are able to interpret. There are other ways of communicating than by the voice.

Let us suppose that some person from a far land, say, an Eskimo, were

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to discover two deaf-and-dumb boys "talking" upon their fingers, would that Eskimo imagine that a conversation was in progress between the two? The method would be strange, and not to be understood by this Eskimo, who could never have heard of such a thing as the deaf-and-dumb alphabet. There are open to the animals ways of speech quite as wonderful as that employed by our skilful deaf-and-dumb boys and girls.

Let us start at the top of the animal tree, and think of the monkeys. We know that they have means of communicating one with another.

Men who have charge of monkeys tell many stories about their cleverness. One day, Jenny, an orang-utan at the London Zoo, went farther from her cage than her trainer wished, and he pretended to be cross with her. She instantly ran up to him to make friends, put her arms round his neck, kissed him, and whispered to him till she believed herself forgiven. He did not understand what she was whispering, as, doubtless, one of her own species would.

A very different experience of ape language befell Brehm, the great German traveler and naturalist. He came upon a troop of baboons, and two bold dogs which he had with him went in pursuit. The baboons

ran away, leaving behind, however, a baby baboon, which Brehm hoped the dogs would catch for him. But, as the dogs drew near, there was a loud outcry among the baboons; and, while the rest yelled their battle-cry to frighten the dogs, a large old baboon came quietly but quickly down the rocks, snatched the little one away almost from the jaws of the dogs, put it in a place of safety, and kept guard until it had caught up to the rest. Two days afterwards, Brehm met the same troop. Again the apes raised their battle-cry. Brehm discharged his gun at them. The females fled in haste behind rocks with the young ones, while the big males, roaring and barking, sprang upon the edges of rock, and then deliberately rolled big stones down upon Brehm and his companions. The baboons all acted under the command of their leader, and one actually climbed a tree, with a stone in his arms, that he might have a better and higher position from which to throw his missile.

Many such cases have been recorded, so that there is no chance of a mistake. Take an even more notable example. Here the animals were a party of baboons at the Cape of Good Hope. They had stolen some clothes from barracks, so Lieutenant Shipp sent a squad of soldiers to recover the articles. The baboons made for some caverns, which the soldiers tried to prevent them from reaching. But the baboons were too quick; they posted fifty of their number to guard the way to the caverns, and the others distributed themselves like soldiers at various posts, and hurled down great stones on the soldiers. The leader was an old, grey-headed baboon which the soldiers knew quite well, for it had often paid friendly visits to the barracks. He

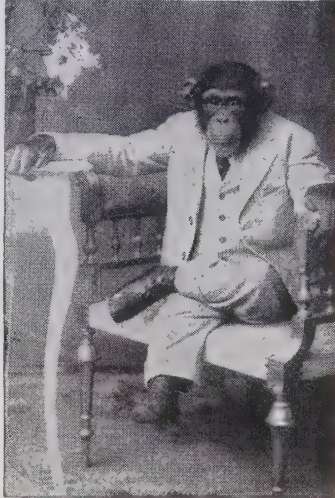
was the general, and the soldiers could hear him issuing his orders to the rest, while the others obeyed him as soldiers obey their officers. Here the English soldiers had to retreat before the apes, as Brehm and his friends had had to do—to retreat from ape-soldiers who acted like human beings, upon the spoken instructions of their skilled commander.

It is not easy to study the language of such terrible animals as lions and tigers. We know that the lion roars like thunder to terrify his prey, or to challenge other lions to battle. But when the male lion talks to the lioness he uses gentle language, and will purr to the lady of his love like the great cat that he is. The speech of the tiger is not more easy to describe, but we may see by a story

what happens when the tiger does speak. A few years ago a man who was resting after a day's hunting in India suddenly felt himself crushed to the ground, and, on coming to his senses, found that a great tiger was carrying him away in her mouth. She carried him about a mile and a half, then put him down. His left

shoulder was broken, and he dared not move, though he still managed to clutch his gun in his right hand. The tigress now raised her head and gave a long, soft cry. The answer came from the jungle close by, and two tiger cubs, her babies, came running up. They were terribly frightened when they saw a man lying at their mother's feet. But she cried softly and purred to them, and taking him up in her mouth, gently shook him,

and tossed him about from paw to paw as a cat tosses a mouse. She was telling them by speech and by action to come and eat him. After much persuasion of this sort they approached, and began with their baby teeth to tear at his legs, until,



AN INTELLIGENT MONKEY



OUT FOR A WALK

HOW ANIMALS TALK TO EACH OTHER

rolling over on to his side, he contrived to level his gun, and shot the tigress through the heart. Tame tigers mew to call their keepers to them, and purr with pleasure when they are answered. They have a certain cry when they want water, and another kind of cry for food.

If we notice half a dozen boys put their heads together, then separate, and all set to work, we imagine that they have agreed upon some plan. A similar conclusion is reached, then, when we see animals do the same sort of thing. Two foxes were seen descending a narrow, rocky valley. They stopped at the bottom, put their heads together, and seemed to be coming to some agreement

traordinary evidence of intelligence was given by a cat in a suburb one September night in 1906. Its mistress was aroused from sleep by the cat mewing and scratching her. This behavior was extraordinary in so affectionate a cat, so the mistress sat up in bed and looked about her. She at once discovered the cause of the animal's anxiety. Her husband had been seized with a fit, and was lying desperately ill, and the cat had wanted to call the wife's attention to the matter.

A clergyman not long ago saw a young cat, which had been absent from home for a week, return to the garden by way of the wall. Its mother lay on the lawn, and the kitten, which looked fat and happy after



THREE ORANG-UTANS AT DINNER

The manlike apes are remarkably intelligent and almost human in behavior, and not only do they chatter among themselves, but have a habit of whispering into one another's ears, as if in intelligent conversation.

One of the foxes now lay down in some bushes, while the other returned up the little valley. Presently down came a hare, running as fast as it could, with the fox hard after it. The hare shot past the concealed fox, which darted out a second too late, and so missed the hare. The second fox came up immediately, stopped when it reached the first, made an angry sound, expressing disappointment, and then attacked the bungler which had spoiled the ambush that they had planned together.

There is no doubt that cats try to speak to their masters and mistresses. Many cats have warned human friends of fires which have broken out in the night. Ex-

its long absence, went up to her. She got up, and they put their heads together as if talking. After a minute or so, the kitten and its mother bounded on to the wall, and off they went together. They were absent from their homes for more than a week, then returned in the best of condition. Without doubt the younger cat, on first returning to the lawn, had told its mother of some great find, and she had gone away with it to share its good luck.

Wolves make very clever arrangements before setting out to hunt deer. They come up to a place in a body, hold a sort of conference, then divide, and each one takes up a place for itself. One wolf will

then approach the deer, and drive it in a certain direction. The deer is too fleet to be caught like this, but up jumps a second, untired wolf, and drives it a little farther. A third wolf will chase it toward another ambush, and a fourth will continue the chase, always working toward where another wolf is concealed, until finally one of the hidden hunters is able to dash out and make the capture. All the other wolves then come up and share the food thus won.

Naturally we expect more than the average amount of intelligence in the elephant, and we are not disappointed. It has a voice like a clarion for communicating messages to far-off companions. How this acts we know from Mr. W. T. Hornaday, who, a few years

elephants employ. We must remember that in time of drought many pools at which animals drink dry up, so that a great number of wild beasts are driven to the pools which still contain water. Hence enemies are brought together, and experience has taught them all that men are likely to lie in wait at these spots to shoot them. One dark night in summer an English officer climbed a high tree overlooking one of these watering-places to watch for a herd of elephants coming to drink. For two hours he waited without detecting a sign of life; then, very quietly, a huge elephant, such as the herds always follow, stalked out of the wood and walked very cautiously toward the pool, halted near it, and remained motionless, listening intently.



A YOUNG ELEPHANT GRIEVING OVER THE DEATH OF ITS MOTHER

Elephants show many feelings that are quite human. In the first picture we see a young elephant trying to wake up its dead mother by touching her with its foot; in the second it is trumpeting loudly to express grief.

ago, was in India to get elephants for the New York Zoological Park. An attack was made upon a herd of wild elephants, and the herd was divided into two parts. One half went north, while the other half fled south. The hunter's camp lay between the two sections. About bedtime, says Mr. Hornaday, the elephants began signaling to each other by trumpeting. The sounds were just such as a bugler would sound were he calling troops to assemble. One herd called, and the others answered, and it soon became clear to the hunters that the two herds were advancing from different directions to unite. And the two herds did unite, guided, the one to the other, by the signals. The trumpet-call, says the hunter, was "a regular *helloa* signal, and quite different from the *taloo-e* blast which elephants sound when feeding."

But there is a silent language which

Feeling satisfied at last, he returned to the wood, and came back, accompanied by five other elephants. They all marched slowly to the water, and the leader posted the five as sentinels in five different positions near the pool. Then once more he went back to the wood, and this time brought out the whole herd.

Eighty elephants trooped down to the water to quench their thirst, but not until their leader had come out to see if all were safe. They had waited to receive instructions from him, and now they and he and the five sentinels drank their fill. The officer, who watched with wonder, felt convinced that the whole plan had been carefully arranged in advance, and that the whole herd acted entirely under the control and direction of the splendid beast which led. It was a triumph for silent language.

It is after elephants are tamed, how-



YOUNG LION CUBS INTERESTED IN THE CAMERA THAT TOOK THIS PHOTOGRAPH

ever that we are able to see some of the most wonderful things that they do. Two tame elephants had to climb with their loads up so steep a place in the mountains that their drivers placed tree-trunks as steps for them. The first elephant to go did not like the way at all, and complained with loud cries to the one waiting below. The latter watched with the greatest interest and could not keep still, but was moving about all the time, as if trying to help its comrade, just as we see men moving their hands and feet when watching a gymnastic display.

At last the first one reached the top and the turn of the second came. He was just as nervous as the other. The one at the top waited anxiously, and as soon as he could, he put out his trunk, curled it round that of the other elephant, and pulled the latter safely up.

And then what a scene of joy there was between the two! They "embraced" each other with their long trunks, and stood face to face for a long time, as if whispering congratulations.

A word now for the conversation of the pigsty. Let us remember that by nature the pig is one of the cleanest and most intelligent of animals; it is only the cruel manner in which men neglect the pig which makes this animal's habits so unpleasant. There was a famous pig in the New Forest in England which was taught to find and bring back game which its master shot.

This pig had a numerous family of little ones, and she noticed that, one by one, these were disappearing while she was out hunting with her master. The little ones were being taken and eaten by their owners. One night, the big old



AN INTERESTED CONVERSATION BETWEEN TWO LIONS

mother-pig was missed from her home, and men set out in search of her. They found her and the remainder of her family on the verge of the forest. She was talking busily away to them in the best of pig language, and driving them to a place of safety in the woods, away from the sty from which so many of their brothers and sisters had gone to be roasted, in their mother's absence.

How whales talk we do not know, but we do know that the mother whale is a devoted parent who will fight to the death for her little ones. Brave, too, are the seals. The male seal will defend his family until he is struck dead. The mother does not wait; she calls her children with a voice like that of a bleating sheep, and away they shuffle to the sea. She talks to them in this way when danger does not threaten, and it is at the call of her voice that they go to the sea to learn to swim when they are babies.

We must all have noticed that rats and mice have some way of talking. If a rat should discover a new source of food supply to-night, by to-morrow night he will have brought a dozen friends with him to share, and these in turn will bring dozens more. But do we ever think of the frog as a talker? He must talk pretty well. If we walk quietly up to a frog's pond on a warm night in spring, or early summer, we hear the frogs talking. Make a sound, and there will be heard one loud, commanding croak, then a series of flops, and after that perfect silence. The leader of the frogs has sounded the danger-signal, and all the rest have popped down under water.

Here is an instance of communication of a different kind. A gentleman who lives in a country house was alone in his house for some time some years ago. At the bottom of his garden runs a meadow in which frogs live. One of these frogs made its way into his garden and lived in his rhubarb-bed. He did not like frogs, but some of his visitors did, so he let this frog remain where it was, free to come and go in the meadow or in his garden. One evening, as the lamps were lighted in his

house, what should he see on the doorstep but the frog from the meadow and the rhubarb-bed! The weather was very chilly, although the time was summer, so there was a fire in the sitting-room. Master Frog, hopping through the doorway, entered the sitting-room, looked about, then hopped toward the fire, and squatted down, blinking comfortably at the cheery blaze. The gentleman was amazed at its impudence, but let it remain for an hour or so, then he gently put it out of doors and went to bed.

Next night the frog was there again, so he felt bound to feed it, for mere hospitality's sake. He knew nothing about the diet of frogs, so after puzzling his brains he put down some powdered sugar. And, astounding to relate, the frog ate it—every speck of it. After staying its hour, it was put outside. There had never, up to this time, been

more than one frog at a time in that garden, so far as was known, but the very next night after the supper of sugar, the frog came back, accompanied by its mate. Both creatures received sugar that night, and they enjoyed it. Every night for the next three weeks the two frogs appeared



A CAUTIOUS FOX

at the same time at the house, were admitted, and were given their supper of sugar. And then, at the end of the third week, the kind-hearted gentleman had the misfortune to tread on one of the frogs and kill it. The other one went out as usual, but was never seen again after that day. It could not understand that its mate had been killed by accident, and it could not go again to the place where its mate had come by its death.

From wild animals we come back to tame creatures. Anyone who has had donkeys in his neighborhood need not be told that these animals talk to each other. There is a little Shetland pony, of which you can see a picture in the Book of Knowledge, who knows how to talk to a donkey. The pony spends an hour or two every day in a meadow adjoining his stable, and sometimes a donkey is to

be seen in the field next to it. The pony, on being turned into the field, first takes a gallop all round, then canters up to the iron fence, and neighs. This call brings up the donkey to the other side of the fence, and the pony waits for the donkey to put his head between the railings and gently nibble his neck. Then he returns the compliment by nibbling the neck

when he hears a familiar footfall approaching his stable. If he wants to come out, he knocks at the door with his front feet. Should he by any means be short of water, he will tap at his bucket with one of his hoofs until somebody supplies him with some.

But what of the dog and his speech? That he understands much that we



TWO TERRIERS TAKING A WOUNDED COLLIE DOG TO A LONDON HOSPITAL

This picture is reproduced from the painting by Yates Carrington at King's College Hospital, by permission of Messrs. A. and F. Pears.

of the donkey. That is an exchange of service which horses and donkeys love.

This pony has his set speeches with which he summons people to his stable. He has a shrill neigh which announces that, according to his appetite, it is time the groom went to feed him; he has a low whinny which expresses his pleasure

say, all of us who have kept dogs know. A fine example is furnished by a gentleman who was talking to a Scots shepherd of the latter's dog. The shepherd, to show the intelligence of the animal, said in the middle of a sentence about something else—and said it in a low voice without looking at the dog—

"I'm thinking, sir, the cow's in the potatoes." The dog instantly leaped up, sprang through the window, and clambered up on the turf roof of the cabin to get a good view. Not finding the cow in the potato garden, it went to the cowshed, saw the cow there, then returned. The trick was repeated, and again the dog darted off, with similar results. Presently the shepherd said, for the third time: "The cow's in the potatoes, sir." But this time the dog merely got up, showed his teeth as if in a smile, growled at his master, then curled himself up

one another is the action of a spaniel which was found lame by a kind doctor. He took it home and cured it, and let it go. A few months later the spaniel returned to him again quite well, but bringing with it another dog which was lame. With pitiful looks and whines it seemed to beg the good doctor to give its friend as kind treatment as it had received itself.

Lest we should think this is too wonderful for belief, let us recall an incident which happened at a London hospital. Three dogs marched in there



HOW MULES PASS ONE ANOTHER ALONG THE EDGE OF A PRECIPICE IN THE PYRENEES

These animals show remarkable intelligence. When they meet on a narrow ledge, the mules going one way lie down and keep quite still while the animals going the other way step over them, as seen here.

comfortably before the fire, and refused to go out.

There is a good deal of language in the bark and in the whine of a dog; the dog can almost speak to us with his eyes, with the twists and jerks and shrugs of his body. But how do dogs talk to one another? Perhaps at times their thoughts are transferred, without sounded words, from dog's brain to dog's brain, as we transmit telegrams without telegraph wires.

A wonderful example which shows that dogs do convey their thoughts to

one day. Two of them were terriers belonging to a well-known bookseller.

These two were all right, but between them they helped into the hospital a big collie dog which had been injured. The terriers lived near the hospital, and their master's explanation is that, frequently seeing injured people taken there, they had come to the conclusion that a place which was good for suffering men, and women, and children, must be good for suffering dogs. But how eloquently they must have talked to persuade the injured collie to let them take him to the hospital!

The Book of WONDER

THE questions on these pages are of great interest to us all, whether we are little children, looking up at the starry skies and wondering where space ends, or whether we are wise old men and women still studying the same great subject. Why should an egg grow hard when cooked, while other objects become soft is not so difficult to answer; but can we know the future, and how can we govern the future in our own lives are among the things that are most important to us. Really the answer to this last question partly gives the answer to the question, Why is it bad to believe in fatalism? For if we govern our lives so that we shall be strong in the future, the doctrine of fatalism must be overthrown. As a rule we do not think that metals can grow tired or that they may become poisoned; and it is interesting to read the answers to these questions and find out if such things are possible. These answers tell us how it is that we can see people in our minds when they are absent, and how it is that the blind can make the sense of touch do much more than we who have full use of all the senses.

DO THE STARS REALLY TWINKLE?

THE answer to this question is:

No. A source of light may really twinkle; the light may grow less and more intense alternately because less and more light is really being produced. But the stars are suns, and they do not really twinkle. Something must happen to the light from the star before it reaches our eyes which makes the star appear as if it twinkled. The star itself sends steady, equal rays of light in all directions, and there is no reason to believe that anything happens to these rays until they reach our air.

But when they encounter the air, various things may happen; and one is that some of the rays may be slightly delayed as compared with others, and thus there is made possible the remarkable thing called interference, which we notice in the case of sound-waves and water-waves. It is possible, as we see when we throw two stones, one after the other, into a pond, to have two sets of waves going in such a way that they will either cancel each other or double each other. This interference in the case of light-waves causes what corresponds to a beat in sound-waves. It is probable that the twinkling of stars is due to this fact of interference.

WHY DOES BOILING MAKE POTATOES SOFT AND EGGS HARD?

It seems curious at first sight that the same process should have such different results in these two cases;

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but the key to the puzzle lies in the very different natures of an egg and a potato. A potato is mainly a store of starch for the future needs of the plant, and the bulk of it consists of grains of starch covered with a hard coat of almost woody substance. It is these that give the potato its firmness. When the potato is boiled, water is drawn into the starch-grains through the hard, stiff coat, which is not elastic, and cannot expand when its contents are increased.

Water cannot be compressed, and therefore the grain is bound to burst. The bursting of all the hard envelopes of the starch-grains, and the increase of water in the potato as a whole, are the causes of the potato's softness when it has been boiled.

Though there is much more water in an egg than most people think, a large part of it consists of a peculiar chemical substance, meant to be a supply of food material to the growing chick, and called egg-albumen. It belongs to the great class of the proteins. This word means the same as proteids, which is better known, but is now no longer used by chemists. Proteids, or proteins, are the most important of all animal and vegetable compounds.

Perhaps the most especial fact about the proteins is that they are made up of molecules which are enormous, for molecules, and prob-

ably this accounts for the fact that they are very easily turned solid by various means. This is called coagulation; and every protein has its coagulation-point of temperature. The albumen, or white, of an egg is an example of this, and the egg turns hard because this protein clots, or coagulates.

We must not suppose that, like the turning solid of water when it is cooled, this is merely a question of temperature, for a clotted protein does not turn liquid again when it cools, and it is quite easy to clot a protein in many ways without heating it at all. Clotted protein is naturally very much less easy to digest than liquid protein.

HOW FAR DOES SPACE EXTEND?

We know that though the earth never ceases to fly in space, yet its path is a closed one, since it moves in what is very nearly a circle, and not in a straight and endless line. As far as that movement is concerned, the earth does not need so much space, after all, for its flight. But we find, when we study the sun, that he also is moving, and moving onward; not, so far as we can tell, in a closed path, or orbit, at all. And so we are bound to ask how far does space reach, for we ourselves must be traveling with the sun wherever he goes.

The only possible answer, fearful though it may sound, is that space goes on for ever and ever in all directions. The Latin word for infinite simply means not ended, or unbounded, and what we mean when we speak of the infinite universe is that space is without end in all directions. Yet we are not to allow this tremendous idea to make us shake, which is what the word tremendous means. For greater—far greater—than infinite space is the wonderful mind of man, which is able to survey and think of such a thing.

WHAT IS SPACE MADE OF?

There is no other possible answer to this question than that space is made of—space! The stuff that makes things does not make space, but it exists in space. Space is no kind of matter, however transparent and fine, but all matter and the things that matter makes exist in space. We might as well ask the question, What is time made of? as, What is space made of? And there is nothing but the

corresponding answer to return to both.

We know that all sorts of wonderful things happen through space. Light flies through it for immense distances, and the power of gravitation acts through it. At first we can find nothing at all to carry these powers, and yet our minds assure us that there must be something there, or gravitation could not act and light could not travel. Thus we come to another interesting question—a question which really can be asked and must certainly be answered, What fills space?

Certainly something fills space, and we may call it the ether. We say that gravitation acts through this ether, that the ether conveys light, radiant heat, and electricity, and that it exists absolutely everywhere. We believe that infinite space is filled with this ether—which, indeed, it is now the fashion to call the “ether of space.” But at present we can scarcely return any more definite answers as to what this ether is, though we know so much of what it does.

IS IT POSSIBLE TO KNOW THE FUTURE?

In many ways we *do* know the future, and are always learning to foretell more and more of it. There was seen in the sky not very many years ago a great comet which had not been beheld by the eye of man for three-quarters of a century, but the return of which was predicted correctly to within a few weeks or days. Again, we know that, on the average, men who eat and drink too much will die sooner than those who do not. We know that if we buy something at a shop without paying for it, a bill will be sent in. We know a great deal of the future, therefore, because the future, like everything else, has causes, and where we know the causes we can foretell what the effects will be. Science, it has been said, is foreseeing, and that assertion is yearly coming to be more justified.

Though we do not know that we shall die during the following year, we know pretty closely how many persons will die, how many babies will be born, how many men will go bankrupt, and so on, in the following year. We can apply the law of averages, and that helps us to foretell the future with fair accuracy.

There is much we cannot know, much of detail about our own lives which no

one can predict, and it is indeed well to know that our own wills and courage and faith can *make* the future, and that it is not *fatally* decided for us in every particular by some power against which we are helpless. Too many people have believed this lie, and have failed in consequence to live the highest kind of lives.

WHAT IS FATALISM?

In many times and in many parts of the world men have preached that everything which will happen will do so whatever we try to do, or try not to do. Men have rightly seen that great facts in the world go on whether we will or not, that autumn follows summer, that we all must die, and so on. And so they speak of something which they call Fate. But too often they have gone on to say that our feeling of power and of will is a mistake and unreal, and that, though we think we decide things, everything we do is really done to us, and we are in the grip of Fate just as much as lifeless things and animals and plants are. This heart-breaking doctrine is called Fatalism.

WHY IS IT A BAD THING TO BELIEVE IN FATALISM?

Anyone can readily guess what are the consequences of fatalism. Of course, it means that, in places where it is believed, men fold their hands and accept whatever comes without a protest. If there is drought, they sit still and suffer instead of going in search of water. If there is a pestilence, or a wicked king on the throne, or if the crops do not ripen, they just accept these things and say: "This is Fate, and what is the good of striving against it?"

But the truth is that, though everything is due to causes and must follow those causes, the will of man is one of the causes in the world; it is, indeed, the greatest of them all in the effects it can produce. And so fatalism is false, and the true doctrine to believe is that God helps those who help themselves.

ARE WARS NECESSARY?

No real thinker believes that war, as we now understand it, is necessary. But the question is much more difficult if we ask it regarding the past. Everyone will now agree that certain kinds of wars were never necessary and need not have happened. Among them would be all wars undertaken merely for the sake of a single person, whether for the sake of

a king and his royal line, or for the sake of a great conqueror like Napoleon.

We shall all agree, also, that the wars of religion were not necessary. It could not be to the real service of religion that men should kill each other, and, of course, in all such cases the real cause was the ambition and lust of power of individual persons, kings and others, with whose "immeasurable, unimaginable guilt, heaped up from hell to heaven," as John Ruskin says, history is full.

But there were also wars made by more civilized peoples, whose numbers were rapidly increasing, upon barbarians. All civilization has spread in this way, and those among whom it spread have always fought against the invaders, as the Gauls and the Britons did against Julius Cæsar. It seems that, as the world is made, such wars were necessary in the past, just as death is necessary.

The case is quite different now, when the whole of the habitable world, and practically all the uninhabitable world too, have already been brought under the control of the so-called civilized nations; and so, in the future, these wars of aggression also will no longer be necessary.

IS THERE ANY GOOD IN WAR?

War in itself is bad. When a nation goes to war, it suffers horribly, even if the enemy never sets its foot within its borders. Nowadays when the whole manhood of a nation is engaged in battle, no one escapes. The whole life of the people is upset. Trade and commerce are interfered with, and the energy of the manufacturer is chiefly turned to the making of material for death and destruction. Scarcely anyone escapes the sorrow that comes from the death of loved ones, who are stricken down in the prime of their youth and usefulness, or the knowledge that they are suffering far from home or languishing in a foreign prison.

All this is bad, but it is nothing to the suffering of the people in whose country the war is fought; where homes are ruined, the land is laid desolate, and the women and children are often dreadfully done to death. In times of peace, we are horrified and saddened when we hear of shipwrecks and disasters at sea. In times of war, men who in times of peace would risk their own lives to save the lives of others have caused these ship-

wrecks and disasters, and thought that they were justified.

But, in spite of the horrors that it brings, war is sometimes right. If one nation is attacked by another, which seeks to overthrow its liberties, to oppress its people, to take away its lands and goods, then the only thing that the nation which is attacked can do is fight. A war to uphold freedom and justice, to save the weak from oppression, to save our country from an attempt by an enemy to destroy it is right. If the youth of a country are unwilling to stand "between their loved homes and the war's desolation," that country cannot stand.

CAN A PIECE OF IRON GET TIRED?

Certainly it can, and so can a piece of steel, and, indeed, metals in general, as well as many other things that are not really alive. When the iron is "tired" it will not behave in the same way as when it is in its usual state. After a "rest" it will come right again.

People who use razors often notice that if a razor is used every day it will not shave so well. It gets tired, but after a rest it will take as keen an edge as ever. This is a very interesting question which has lately been studied very carefully, and the special interest of it is more even than we can see for ourselves at first; for if ordinary matter, not alive, can get "tired," perhaps part of *our* tiredness may be due to the same thing happening in the matter of which our bodies are made. Not much is known about fatigue, and it is very important to discover that there is a change produced in all matter by strain.

CAN WE THINK ABOUT PEOPLE WITHOUT SEEING THEM IN OUR MIND?

Certainly we can, for we remember our friends by many senses, and not by our eyes only. In most people the mind's eye, as we call it, is very powerful, and they remember faces clearly, and think of their friends as something *seen*. Then again, in other cases people have their mind's ear, as we might equally well call it, very well developed, and they remember voices clearly, and will often think of their friends or their enemies as something *heard*.

Exactly the same is true of other senses, such as the sense of touch. When we are

very fond of a person, our thought of him or her may mean recalling the face and the voice and the touch of the hand all together. The artist will have the one tendency strongest, whilst the musician will have another. Some people think of their friends under their names; but in our minds we may see their eyes, or mouth, or clothes.

CAN METALS BE POISONED?

The answer to this question is yes. That is to say, we find that metals which do certain things when an electric current is passed through them, or when they are heated, or when a beam of light plays upon them, and in other such cases, can no longer do what we expect if they have first been treated with some of those very chemical compounds, such as prussic acid, which poison living creatures.

When a person is under the influence of chloroform, certain of his nerve-cells are poisoned, and do not work, and then the person will not react, as we say, to pain or to light and other stimulants. In the same way, not only a strip of turnip or carrot, but a strip of metal may be poisoned and fail to react. The rule seems to be that anything which acts in a particular way on a strip of muscle will act in a very similar way on a strip of vegetable tissue or also on a strip of metal.

CAN A BLIND MAN'S TOUCH TAKE THE PLACE OF HIS SIGHT?

The answer to this is partly yes and partly no. Certainly the sense of touch can never develop in any blind man so as really to make up for his loss of sight, and no one supposes that it can. But it is true that a blind man, because he must make the most of the senses he has, educates his sense of touch to a high degree, and makes the most of it. People who can see do not do so, any more than they develop the sense of smell to the utmost. When we can judge of a thing positively by looking at it, we do not trouble to try our fingers on it.

But it is quite untrue that the sense of touch itself is more delicate and acute in blind people. The point has lately been studied, and it is found that touch is less acute in blind people, though it may be better educated for special purposes. The brain being a whole, the whole of it must suffer when part is defective.

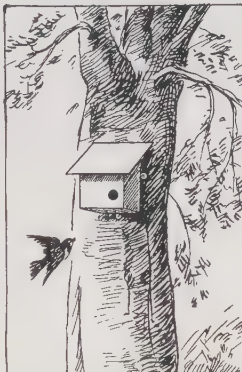


NESTING-BOXES CONTAINING EGGS AND YOUNG BIRDS

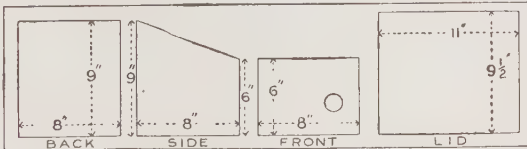
A HOME FOR THE BIRDS

TO the boy or girl who is a lover of Nature there are few more enjoyable hobbies than that of putting up nesting-boxes for the birds, and then, when the birds have made their nests in the boxes, paying a daily visit to see how they are getting on hatching and bringing up their little family. There are few gardens where we cannot entice the birds to nest in a little box placed on a tree or a wall for their convenience, and the cost of erecting nesting-boxes is practically nothing.

First of all as to the boxes. These may be of the simplest and roughest kind, provided they are weather-proof. A small box from the grocer's may be cut down, but if we wish to make a nesting-box the best form is as follows: Take a piece of wood 8 inches by 9 inches, as shown in the lower picture. This is for the back of the box. Then cut two pieces for the sides, 9 inches high on one side and 6 inches on the other, by 8 inches wide; a piece 8 inches by 6 inches for the front, and a piece for the bottom. The exact size of this bottom piece will depend upon the thickness of the wood used. Thus, if we use wood a quarter of an inch thick—which is a very good thickness—the bottom must be 8 inches by $8\frac{1}{2}$ inches. With thin nails fasten



NESTING-BOX IN POSITION



HOW TO CUT THE WOOD FOR A NESTING-BOX

the two sides to the back, and then nail the front into position. Now fix on the bottom. We next want a piece of wood, 11 inches by $9\frac{1}{2}$ inches, for the lid. This is hinged on at the back of the box in such a way that it is flush at the back, but reaches out beyond the box all round on the other sides. The edge of the lid at the back must be beveled

off to allow of its being opened. Before putting in the front we should make a round hole, varying in size according to the birds we wish to nest in the box. For small tits the hole should be not more than $1\frac{1}{4}$ inches in diameter; for great tits, robins, nuthatches, and flycatchers it should be $1\frac{1}{2}$ inches; and for larger birds like starlings, 2 inches in diameter.

We must now decide where to fix the box. If possible, the box should face north or east, and it should be fastened firmly by a nail, screw, or hook to a tree or wall, out of reach of cats and other creatures that prey on birds and their eggs. A good height up to fix the box is from 8 feet to 12 feet, and if it is on a tree it is well to fasten round the tree a broad band of zinc, which will prevent cats and other enemies from climbing up. The sloping roof will allow the

rain to run off, and will prevent cats lodging on the top and catching the birds as they go in or out. In a single garden, not very many miles from New York, different nesting-boxes were occupied by redstarts, great tits, orioles, nuthatches, tree sparrows, house

sparrows, starlings, and wrens. The birds, as soon as they have selected our box for a nesting-side, begin to build their

nest. Then the hen lays her eggs, and while she is sitting we may once or twice a day open the lid at the top and have a peep; but we must not disturb the bird too much. Later, the birds are hatched, and we can watch them until they fly away. Remember that birds usually come yearly to the same spot to make their nests.

FLASHING MESSAGES AT NIGHT

BY following the instructions given below, anyone can make a little instrument by which he can flash messages to his friends at night across considerable distances. The idea of the instrument is something like that of the heliograph which soldiers use for sending messages to one another in daylight. The word heliograph really means to write by the sun, and the instrument consists of a little looking-glass that can be twisted about on a stand so as to catch the sunlight, and make flashes that are seen at a distant point.

The instrument we are going to make is very simple. First of all we obtain from the grocer a wooden box about a foot high by nine

inches wide, and nine inches deep; the box should have a hinged lid. Inside this we are going to place a lamp, so we bore in the top a few holes, half an inch in diameter, to allow the fumes or smoke to escape. Then in the bottom of the box, which will be the front when it is stood up on end for use, we make a round hole one inch in diameter. Now on the inside of the lid of the box we hang a reflector of some kind to strengthen the light. The reflector from an old kitchen lamp, polished up, will do very well, or even a piece of ordinary looking-glass.

We also want a shutter on the front of the box that can be used to open and close the round hole through which we shall flash our messages. The best thing for the shutter is a piece of sheet zinc, that can be bought at a hardware store for a penny or two. The shopkeeper will cut the zinc to the size and shape required. It should be of the shape shown in the picture, and should be about

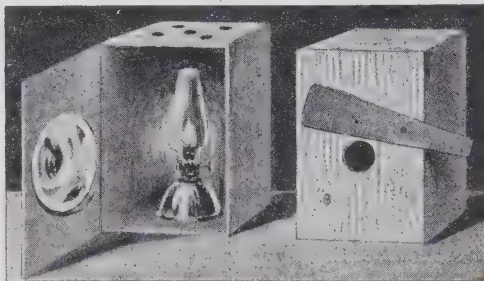
eight inches long and two and a half inches wide at its broadest end. A hole must be punched near the middle, and it is fixed in position, as shown in the picture, with a screw. The zinc must work quite easily and smoothly on the screw, otherwise there will be some difficulty in working the instrument.

Inside the box we place a lighted candle or small paraffin lamp, and our instrument is then ready for use. Any code of signals can be arranged between two friends, but the most sensible thing to use is the Morse alphabet, giving a short flash for a dot and a long flash for a dash. To make the flashes we hold the shutter by the handle, and work it up and down over the round hole. A little practise will make this quite easy.

Our friend, if he wishes to carry on a conversation with us over a distance, must have a similar instrument. With two flash-boxes it is possible for two friends to talk to one another by flashes at night across a distance of half a mile or more.

We begin by placing our boxes each in a window facing the window of the other, and a few rapid flashes indicate that we are going to begin the conversation. When a boy knows the Morse alphabet, which can be found in any encyclopædia, it is astonishing how quickly, with a little practise, he can flash out messages and read those that are flashed back.

This instrument is not a mere toy. To be able to send and read messages which are sent in this way is very necessary and useful. Scouts should make themselves a similar box, and practise this signaling until perfect.



BACK AND FRONT OF THE FLASHING BOX

THE RIGHT WAY TO USE A LIFEBOUY

IN case we may ever be in circumstances where we should need a lifebuoy, it is well that we should know exactly how to use it. It is of very little use to seize the lifebuoy with the hands and merely hold on to it from the outside. We need to get inside the circle with our arms resting on top of the lifebuoy, and then we get the full value of its support in the water. The best method of getting into the buoy is to seize one side of it with both the hands as shown in the picture, and then to press down that side of the buoy so that it does a somersault. If at the moment the

buoy turns over with the pressure of our hands on one side we duck our head, the buoy will pass over the head, and all we have to do then is to draw our arms up and out on top. If we can get hold of a lifebuoy for a short time in a swimming pool, it is interesting to practise getting into it in the way described, and it certainly requires some little practise. Many persons have got into disastrous difficulties through not knowing this simple rule.

They have tried all sorts of ways of getting into the lifebuoy, usually without success, and then failure has led to really serious trouble.



PUTTING ON A LIFEBELT



TWO CURIOUS KINDS OF PICTURES

MOST of us have seen those long-drawn-out and distorted pictures which appear at first sight to represent nothing in particular, but when held close to the eye and looked at horizontally show a clear and normal picture. These distorted drawings are not made haphazard, but are produced from proper pictures by a scientific plan, that must be worked out in a mathematically correct manner. Very few people know how to make a distorted drawing from an ordinary picture, and yet it is quite easy, and can be done by any boy or girl who exercises ordinary care, intelligence, and patience.

First of all we take the normal picture, which may be either an outline picture from a book or paper or a drawing made by ourselves. Round this we draw a square, $A B C D$, as in picture 1. Then we divide the sides $A B$ and $A C$ into six equal parts, and draw lines perpendicularly and horizontally, so as to divide the whole square into thirty-six equal and smaller squares.

Now we draw another line, $E L$, equal in length to $A B$, and divide this also into six equal parts. From the middle point, H , we draw a line, $H M$, at right angles to $E L$, and the line $H M$ may be any length. The greater the length of this line the greater will be the distortion of our freak picture. A very convenient and suitable length for the line is about three times the length of the line $E L$.

Now we draw straight lines from M to each of the other points in the line $E L$, and from M we draw a line $M N$ to the left of M . This should be parallel to $E L$, and about half the length of that line, although it may vary a great deal, for the distance from M to N is really the distance of the point above M from which we shall have to view our distorted picture to bring it back to the normal proportions.

The effect of making the line $M N$ greater or less is to produce a distorted picture that will have to be viewed from a greater or less height. Join N and L by a straight line, and where it cuts $M E$, at the point O , draw the line $O P$ parallel to $E L$. Then, where $N L$ cuts the other lines, $F M$, $G M$, $H M$, $J M$, $K M$, draw lines parallel to $E L$, as shown in picture 2. We now have a four-sided figure, $E L O P$,

divided into thirty-six sections. These correspond to the thirty-six sections of $A B C D$, and all we have to do is to draw in each section of $E L O P$ that portion of the picture which appears in its corresponding section in $A B C D$, taking care to elongate, or stretch out, the lines of the drawing to fill the space, and join up with that part of the drawing which comes in the next section. Pictures 1 and 2 will show how this is done, and we can compare the normal and the distorted pictures, section by section.

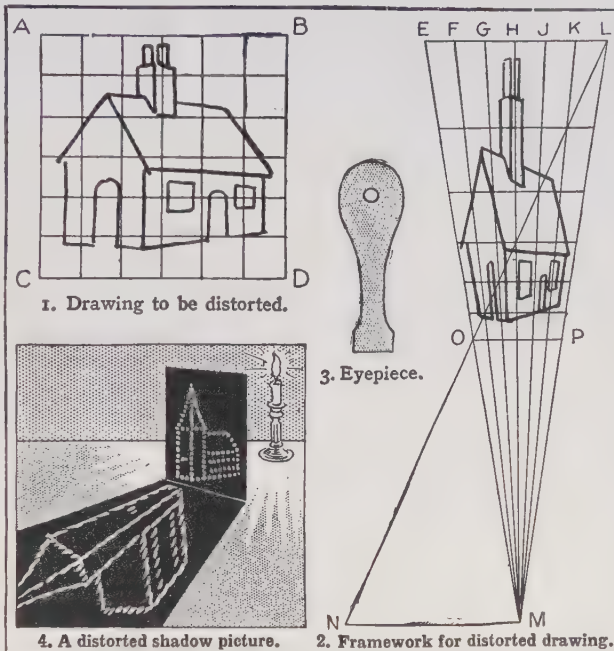
To view the distorted picture in such a way as to bring it back to its proper shape, we cut out a little strip of card, as in picture 3, and, pricking a hole with a large pin or bodkin, we look through this hole at the distorted picture, taking care to keep the little card,

or view-finder, as high above M as N is distant from M . Of course, we can draw our framework for the picture in thin pencil-lines, and then, when we have drawn and inked in our distorted sketch, we can rub out the pencil-lines, so that only the picture is left.

The proper name for these curious optical drawings is anamorphoses, a word which looks very difficult, but is really made up of two Greek words meaning to form again. There is another very good way of

making a distorted picture. We sketch the design or object upon a piece of white cardboard, and then prick all the lines with a fine pin or needle, so that the whole picture is outlined in every part by a series of small, clean holes going right through the cardboard as in picture 4. We then fix the card in a perpendicular position, with a strong light behind it.

On the table in front of the pricked card we lay another white card, and the lines of light made by the rays of light shining through the holes in the upright card form a distorted representation of the pricked picture. We draw over this distorted picture with a pencil or pen, and then, in order to view the picture properly so that it will appear to be normal, we must look through a view-finder with the eyehole placed exactly at the spot where the light was when we drew the distorted picture.



DIFFERENT METHODS OF DRAWING DISTORTED PICTURES

THE BEAR AND THE LITTLE WOLF

A LITTLE PLAY FOR THE NURSERY

Persons in the Play : THE BEAR. THE LITTLE WOLF

ACT I

Scene: A road by a field. The Bear enters on one side, the Wolf on the other

THE BEAR: Well met, brother. I was wishing to find
appearing to be pleasantly surprised Someone to help with a plan in my mind.

LITTLE WOLF: Well met, brother ; and what is your plan ?
showing interest I'm sure I'll be glad to help if I can.

THE BEAR: Yonder field is ploughed for planting with corn.
pointing toward field Would you help me to plant to-morrow morn ?

LITTLE WOLF: Why, yes, I shall help if you will divide
 All the crop that ripens as I decide.

THE BEAR: Well, how would you like to take one half ?
 That would be fair, and neither could laugh.

LITTLE WOLF: Yes, that would be fair, and I agree
 That the half of the crop shall be my fee.

THE BEAR: You know that 'tis said the roots of the plants
with an air of know- ledge Go far down beneath the nest of the ants.

LITTLE WOLF: Yes, so I have heard ; 'tis wonderful indeed
innocently So much should be roots and so little seed.

THE BEAR: Would you like for your share the half below ground,
 Together with stalks that above it are found ?

LITTLE WOLF: Yes, content I shall be so to divide,
offering his hand— or paw And thus we'll arrange I now do decide.

THE BEAR: We agree, then, that I shall have only the ears,
shaking hands with Little Wolf A plan, I must say, that leaves me with fears.

CURTAIN

ACT II

Scene: The same. The Bear beside a pile of ears of corn: Little Wolf beside a pile of cornstalks

LITTLE WOLF: I am sure, Brother Bear, you did not intend
very meekly To rob me, and thus to the poorhouse to send.

THE BEAR: Why do you thus my intentions deride ?
affecting surprise You know you yourself were left to decide.

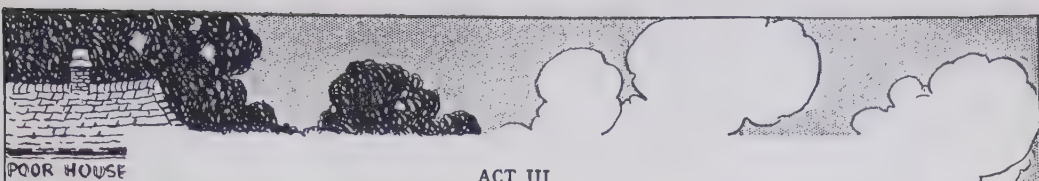
LITTLE WOLF: The roots are but trash, and the stalks as well
indignantly Are only for burning, and not to sell.

THE BEAR: Well, next year, my friend, the game we shall change,
 And you shall have what you like to arrange.

LITTLE WOLF: Of this, then, be sure, I never shall choose
 The worthless old roots that I cannot use.

Both walk off in opposite directions

CURTAIN



POOR HOUSE

ACT III

Scene: The same. Time, a year from first meeting. Enter the Bear on one side, Little Wolf on the other

- THE BEAR: in a friendly way Well met, Brother Wolf; so we meet again
To talk of the crop we shall plant on the plain.
- LITTLE WOLF: Well met, brother. Yes, I would fain
Talk over what part of it I may gain.
- THE BEAR: When last we met, if I do not forget,
On the part above ground your heart was set.
- LITTLE WOLF: What you say is true, and you may prepare
In planning the crop if that be my share.
- THE BEAR: slyly All right, Brother Wolf; then, what would you say
To potatoes, a crop that is sure to pay?
- LITTLE WOLF: Yes, potatoes are good, and agree I would
That they be planted and gathered for food.
- THE BEAR: Very well, Brother Wolf, to-morrow morn
We shall plant them where once grew the corn.

Shaking hands over the bargain, they go off at opposite sides

CURTAIN

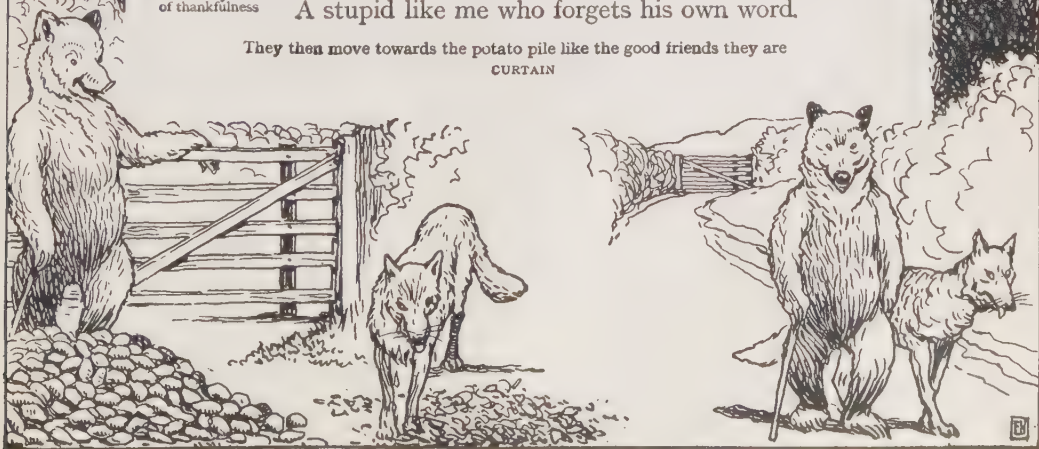
ACT IV

Scene: Same, four months later. The Bear beside a pile of potatoes, the Little Wolf beside a heap of dead potato stalks

- THE BEAR: in a lively and humorous way How now, brother? Why so sad?
Are you ill, or is the crop so bad?
- LITTLE WOLF: speaking sadly You know very well the crop is quite sound,
But you have taken all we have found.
- THE BEAR: I have taken no more than what you said
Should be mine to take in the game we played.
- LITTLE WOLF: in a melancholy manner These stalks are worse than those of corn;
To the poorhouse I go to-morrow morn.
- THE BEAR: Oh, no, Brother Wolf, you must not despair,
For I still desire to treat you quite fair.
- LITTLE WOLF: brightening up at this How now, Brother Bear? Would you divide
That pile of potatoes there by your side?
- THE BEAR: Certainly, brother; I willingly give
One half, in order that near me you may live.
- LITTLE WOLF: with every evidence of thankfulness It is good of you, Brother Bear, to reward
A stupid like me who forgets his own word.

They then move towards the potato pile like the good friends they are

CURTAIN



HOW TO KEEP A HISTORY NOTEBOOK

WE have from time to time learned much of the world's history. How can we fix in our memories the order in which the nations rose and fell, and marshal the procession of mighty men through the centuries?

Here is a simple plan which many have found useful and interesting.

Let us take an ordinary exercise book and rule a thick, black line down its middle opening. Along the line let us write: Time of the Birth of Christ. Then let us head twenty pages after the line thus: 1st century A.D., 2nd century A.D., up to 20th century A.D., reflecting that each page stands for 100 years.

Perhaps before going any farther we may like to jot down a few entries in the centuries to which they belong, such as Edward VII., near the beginning of the twentieth century; the opening of the first railway in America

upwards, because time is reckoned backwards from the birth of Christ, and 100 B.C. is an earlier date than 1 B.C. If any difficulty is felt about this, we can number a few of the B.C. centuries, taking care that 50 comes about the middle of the page, and 75 and 25 at the first and last quarters.

Let us fill in a few of the names we know well, passing backwards into the mists of time.

We have Julius Cæsar in the middle of the 1st century B.C.; Alexander in the last quarter of the 4th; the soul-stirring names of Marathon and Thermopylæ in the beginning of the 5th, and so on.

Many of the century pages in the long stretch of years will remain empty of names, even after we have read many books and studied in many museums. From time to time, too, we may have to make changes in our

TWO PAGES FROM THE HISTORY NOTEBOOK

1st Century B.C.

1st Century A.D.

100		
95		
90		
85		
80	Cicero	
75	Pompey	
70		
65		
60		
55		
50	Julius Caesar	
45		
40		
35		
30	Death of Cleopatra	
25	Egypt a Roman Province	
20	Augustus	
15		
10		
5		
1		

1		
5		
10		
15	Tiberius	
20		
25		
30		
35	Caligula	
40	Claudius	
45	Conquest of Britain begun	
50		
55		
60	Boadicea's Insurrection	
65		
70	Vespasian	
75	Fall of Jerusalem	
80	Titus	
85		
90		
95		
100	Trajan	

before the middle of the nineteenth century; the French Revolution towards the end of the eighteenth; England a commonwealth in the middle of the seventeenth; Spenser, Shakespeare, Francis Drake, the Armada, all in the last quarter of the sixteenth; the departure of the Romans from Britain and the arrival of the English in the fifth; the Conquest of Britain in the first; as well as notices of names and events in the rest of the world.

Next, let us turn to the centuries before Christ and head the pages before the black line, 1st century B.C., 2nd century B.C., and so on back and back till we come to the 55th near the beginning of the book. Each page, as before, stands for 100 years, and, as before, the beginning of each century is at the top of each page, though, as we are dealing with years before Christ, we number from the bottom

pages, for constantly new finds of old treasures upset dates that have long been thought correct.

It adds immensely to the interest of our History Notebook if we can illustrate its pages with sketches of our own, drawn from objects in the museums or from pictures; we can also collect small pictures and fasten them on the century page to which they belong in the manner shown in the specimen pages that are given.

On the pages after the 20th century A.D. can be drawn maps of the countries in the different stages of their history, also plans of the great cities, and of the battles of the world at different stages of their progress.

If there are any spare pages at the beginning of the book, we can put in them drawings or photographs of the various prehistoric implements which belong to the distant ages before history came to be recorded in writing.

THE PUZZLES OF THE WIZARD KING

I. TRANSPOSITIONS

Complete, I am a letter strongly pronounced ;
behead twice, I am a robber ; behead again,
I am angry ; behead again, I value ; behead
again, I am the past tense of a verb meaning
to devour ; curtail, I am a preposition ;
restore to "value" and transpose, I lacerate ;
curtail, I am a beverage ; restore to "lacerate"
and behead, I am part of the head ; trans-
pose, I am a space of time ; restore to
"value" and curtail, I am an animal ; reverse,
I am a sailor.

2. SINGLE ACROSTIC

My initials will form the name of a great statesman.

(a) A game ; (b) a flower ; (c) an animal ;
(d) a weapon ; (e) a bag ; (f) a town in France ;
(g) a precious stone ; (h) a girl's name ; (i) a tree.

3. THE DINER'S REPLY

A gentleman was seen coming out of a restaurant by a friend, who said to him :

"Well, did you have a good meal?"

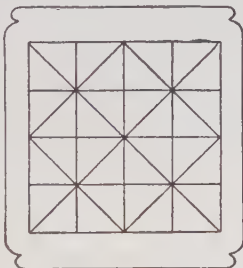
The gentleman replied in the following curious way :

"I so."

Can you say what he meant?

4. THE MAGIC SEAL

This strange seal was used by an Eastern king upon all his state documents, and it was a favorite habit of his to ask all who came to the court, and those to whom he sent letters and commands, to count the number of triangles of all sizes in the square design in the middle of the seal. The courtiers spent a great deal of their time trying to solve the problem that had been set. Some gave one number and some another. How many triangles are there?



The king's seal.

5. RIDDLE-ME-REE

My first is in mountain, but not in hill ;
My second's in river, but not in rill ;
My third is in corn, but not in rice ;
My fourth is in snow, but not in ice ;
My fifth is in rye, but not in oat ;
My sixth is in ship, but not in boat ;
My seventh's in stone, but not in slate ;
My eighth is in soon, but not in late ;
My whole, no doubt, will plainly show
A poet great we all do know.

6. ENIGMA

The poet Schiller wrote this verse. Can you guess what he means?

A bridge weaves its arch with pearl
High over the tranquil sea.

In a moment it unfurls

Its span, unbounded, free.

The tallest ship, with swelling sail,

May pass 'neath its arch with ease,

It carries no burden, 'tis too frail,

And when you approach it flees.

With the flood it comes, with the rain it goes,

And what it is made of nobody knows.

7. DOUBLE ACROSTIC

My initials give a poet, if you read them with ease ;

Finals, one of his poems, which many will please.

1. A bold, daring person, who goes forth for fame.
2. With meadow or prairie you will find this the same.
3. To ensnare or beguile by this word is said.
4. And Socrates wooed her when she was a maid.
5. A poet of Italy next you must find.
6. Merriment reversed, at least to my mind.
7. A very simple thing, easy to write.
8. One or t'other, not both, this word doth indite.
9. Full of guilt, but conscience-struck.
10. To jerk, to tug, it is my luck.
11. A lake that bathes Canadian shore.
12. Palsied like this, my last I could not reach.
13. As in the wild, the ground it hurries o'er.

8. CHARADES

My first may spring from a grey goose wing ;
A king is but my second ;

Of the works of men my third has been

The bravest object reckoned.

And without my first my whole would be

A thing unknown to you and to me.

9. THE PUZZLING BIRDS

Two birds were talking one fine day,

About each other's names.

The one cried out : "Now come let's play
At little children's games."

"Done!" cried the other, "but I've no head

For puzzles, you'll agree ;

Give me your head, and have instead

The head that owneth me."

The first agreed, and his looks sable

Part of a ship became !

The other was a vegetable,

And neither knew his name !

What were the birds?

10. BURIED FLOWERS

Shall I put this scrap in Kate's album?

Tell your father I called to see him.

What lovely hair! I should like mine to
curl like it.

If that man is insane, money should not be
given him.

My cousin Ada is your sister-in-law.

My brother is gone to Japan, Syria, and
India.

Will Mr. Carlo be liable for this?

Hark! how Tom and Sarah are bellowing in
the nursery.

I read to that poor negro several times a week.

This case is urgent; I anticipate a good sum.

11. TWO SHORT YEARS

Why was the year 1888 so short? If you
know, can you say why the year 1889 was
shorter still?

12. SQUARE WORDS

1. A hunt; a hut; to take advantage of;
a French river; a girl's name.

2. Not wild; a field; to signify; an Irish lake.

PUZZLES OF THE WIZARD KING

13. CONUNDRUMS

What is the only thing that can live in the midst of fire?

When may a bird be said to occupy a feather bed?

Which is the longest letter in the alphabet?
Which word is shorter for having a syllable added to it?

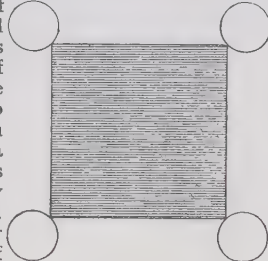
What is that which by losing an eye has nothing left but a nose?

Which is the best way to make a coat last?

What is that which nobody wishes to have and nobody likes to lose?

14. THE FIELD AND THE PONDS

A farmer who had a square field with a round pond at each corner of it was anxious to double the size of the field and still have the four ponds on the borders of the field. But he wanted to keep the field square in shape. This is a diagram of the fields and ponds as they were originally. How did the farmer double the size of the field, keep it square, and yet manage to have the four ponds on the borders, as he wished to do?



ANSWERS TO PUZZLES ON PAGES 5451 AND 5452

1. Spokes: 1. Iota; 2. Idyl; 3. Ibis; 4. Iron; 5. Idol; 6. Isis; 7. Iris; 8. Isle. Tyre: "Alps on Alps arise." Pope.

Inner Circles: 1. Try, and you will soon find it all. 2. Oh do be sure to discover this all.

2. Begin with the first bracketed words, and then read the words above and so on.

Do not covet all you see, for he who covets all he sees often wants more than he sees.

Do not tell all you hear, for he who tells all he hears often tells more than he hears.

Do not spend all you have, for he who spends all he has often spends more than he has.

HOW TO MOVE A PENNY WITHOUT TOUCHING IT

THERE are many coin tricks with which we can amuse ourselves and entertain our friends, and one of the simplest is that of moving a penny without touching it. To perform this trick we require five or six coins; pennies or any other coins will do.

We should see that the table has a smooth surface, otherwise the trick will not work successfully. Placing a penny on the table, we ask the company present: "Can anyone move this coin without pushing the table, or touching the coin with the body, or with anything held in the hand or mouth, and without blowing it?"

Someone is almost sure to say that the thing is impossible, whereupon we inform them that the trick is quite easy, and proceed to show them how it is done.

We take four or five other coins, and place them all in a line at the edge of the table.

Do not say all you know, for he who says all he knows often says more than he knows.

3. Roach, shad, cod, herring, turbot, barbel.

4. BLIND
LOVER
IVORY
NERVE
DRYER

5. A river.

6. Cowslip—Buttercup.

7. The diagram shows the course of the pen. In order to make this clear, spaces are left

R O B R O Y

where the lines should be extended so as to meet.

8. Between the dark and the daylight,
When the night is beginning to lower,
Comes a pause in the day's occupations
That is known as the children's hour.

9. Leaves, eaves, aves, save.

10. The squirrel takes out one ear of corn each day, and his own two ears.

11. The letters are, L, B, T, O, D, J (jay), P and A (aye).

12. (a) Titus Andronicus; (b) William Shakespeare; (c) Cornelius; (d) Cleopatra; (e) Duchess of Gloster; (f) John of Gaunt; (g) Coriolanus; (h) Andre-mache.

A SHORT CUT IN ARITHMETIC

Here is an easy way to multiply together any two numbers between twelve and twenty. First multiply together the units digits (or the right hand figures), and write down the result. Then add one of the numbers and the unit digit of the other. Write down this result underneath the first result and one place to the left, and add these two. For instance to multiply 18 and 14:

Multiply the unit digits (the figures on the right)	8	4	32
Add one number to the unit digit of the other	18	4	22
			252

Each coin must just touch the coin adjoining, and the coin that we are to move without touching must be the last coin at the left-hand end of the line. The great thing to bear in mind is that all the coins must touch.

We then press firmly on the coin at the right-hand end of the line, so that it is impossible to move it. Then we take another coin, and, pressing upon it with the first finger of the right hand, we slide it along quickly so that it gives a smart tap to the coin that we are holding down. Instantly the coin at the other end of the line will move along an inch or two, although the coin that we tapped has not moved at all.

The reason why the end coin behaves in this manner is easily explained. When the first coin is struck, energy is imparted to the struck coin, and this energy is transmitted from one coin to another until the end coin, having nothing to stop its progress, moves along.

A CLUNY LACE TABLECLOTH

WE have all seen Cluny lace; if we do not recognize it under that name, we shall quickly learn to detect it once our interest has been aroused and its charm appreciated.

Cluny lace is a new name for the earliest French bobbin lace which in the sixteenth century was called *passement*. The name is derived from the famous Cluny museum in

Paris (about which you read in the "Holiday in Paris"), where examples of ancient laces are still preserved. This Cluny or *passement* lace is still made in the department of Auvergne in Southern France. The earliest laces were of gold and silver threads. The patterns to-day have changed very little, being still geometric, with formal floral forms and star-like centres. In Auvergne at the present time this lace-making is one of the chief industries. Nearly 200,000

women, living simple lives in the mountains, add to their small income in this way. They are able quickly to follow the fashions, since they can vary the materials with which they work, silk, worsted, and goat's or even rabbit's hair being employed with equal facility. The old gold and silver laces are still made, but of course in greatly diminished quantities, since this form of the fabric is no longer used on men's dresses.

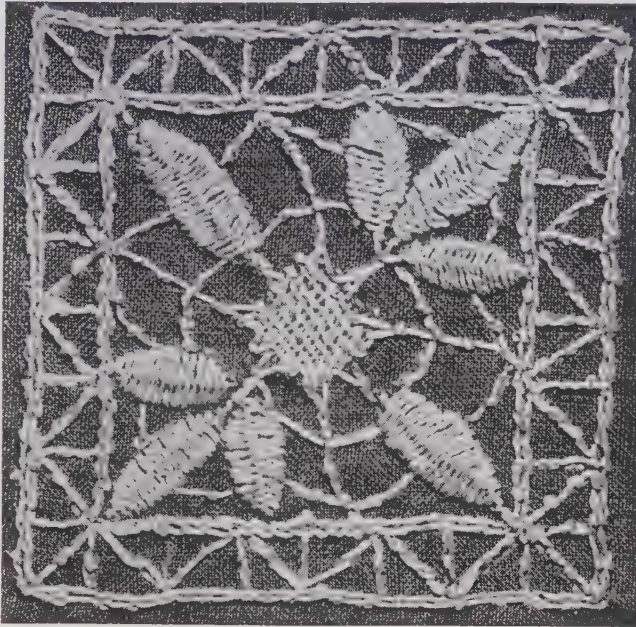
In the seventeenth century, because of the large number of women engaged in the lace trade, there was great difficulty in obtaining domestic servants, and the general fashion for all classes to wear lace caused the distinction between high and low to disappear. Accordingly, a law was passed in 1640 forbidding any man or woman of whatever position to wear lace upon their clothes. In a word, the trade was swept away by the whim of parliament. Father Régis, a Jesuit priest, who was then in the district, did his best to console the sufferers thus reduced to beggary by the passing of this law. He did more. By his arguments he obtained a repeal of the edict, and at his suggestion the Jesuits

opened to the Auvergne laces a new market in Spain and the New World. The Jesuit Father was later canonized for his good deeds. Under his new title of Saint François Régis he is still held in the greatest veneration by the women of Auvergne, as patron saint of the lace-makers.

This example is made of linen thread, and the

design shows little details, rather like daisy petals, fixed into a decorative network of finer threads, while parts of the lace are interlaced like darning.

Now, to make this lace requires some skill, but to embroider on to a linen foundation the stitches which represent it is not a difficult task. When a piece of Cluny is used as a tablecloth it is naturally placed on a dark ground to show up the pattern; we are going to make our lace right on to the dark ground, which will sup-



THE DESIGN FOR THE TABLECLOTH PATTERN

port it and always keep it in shape.

Real Cluny, when washed, inclines to pucker and shrink; in fact, its delicate curves and lines are never the same again. Ours will not suffer in this way, but will wash well and easily.

We shall get some hyacinth-blue linen—a deep shade, not a pale one—and a skein of linen thread, either white or unbleached, and make a tablecloth by using a number of lace squares arranged to form a border. In the picture twenty-four are used, but there is no reason why we should not make it smaller or bigger to fit our requirements. In any case, we shall not let the lace come too near the hem, which will be a wide one and hem-stitched, if we know how to do that; if not, we can hem it neatly in blue cotton



THE LACE BORDER

on the wrong side.

To transfer the pattern, we shall have to get a piece of transparent paper and trace it from this design—in outline only and as simply as possible. Next, with a stick of crayon or schoolroom chalk, we must rub all over the other side of the tracing, smooth the chalk well into the paper with the tips of the fingers,

shake off the loose dust, and our transfer is ready. We must lay it carefully on the blue linen, just where we have decided our lace shall come, pin it down to a board, and go over each line again with a pencil. Lift the paper and we find the design well defined on the linen in chalk. We dip a brush in white water-color paint, go over the lines quickly, and as soon as they are dry we can begin to work on that square.

The stitches are of the simplest—in fact, any we know can be used if they add to our “lace” effect. In this square, knot stitch is used for the straight lines, and the “petals” are done with a loose centre vein, composed of a straight thread, under and over which all the crossway stitches are slipped, exactly as one does the string on a parcel.

Knot stitch is the simplest form of art line stitch ever invented. Having started in the usual way, and finding our needle and thread at the beginning of a line on the right side of the stuff, we hold the thread with the left finger and thumb along the line we wish to cover, and fix it in place by a tiny crossway stitch, at right angles, taken in the linen exactly underneath the thread. We pull it all taut before releasing the left thumb and finger, and it “does itself” with incredible speed.

The irregular spot in the middle of the

square is common darning, which imitates exactly the texture of parts of the real Cluny lace of Auvergne.

The work has the charm of being easily and quickly done, and of being really artistic. Once we have learned to do it, we shall commence to observe patterns of Cluny lace, and to distinguish between them. Many of them are easily copied, and if we have even a small knowledge of drawing, we may vary our work.

This linen work is so strong that it may be used for many purposes. For instance, we may make a counterpane for a baby sister's crib, a washable cushion cover, or, if we work it on white linen, a cover for our bureau. If we have patience to do the work on soft cream-colored scrim, we may make a pair of very pretty curtains for a bedroom, or sitting-room window at small cost. Any of these things would be suitable for a Christmas present, and as the work is quite out of the ordinary run of fancy work, it would be very acceptable.

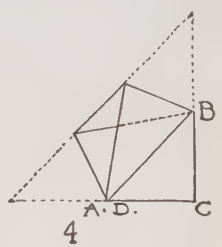
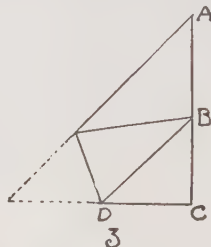
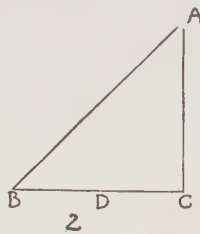
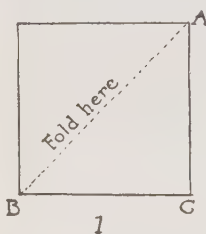
Thin waxed paper, of the sort that comes from the florist's, around flowers, is the best to use as tracing paper. It is tough and if well taken care of can be used quite a number of times. A good way to take a tracing from the pattern is to hold it firmly on the window-pane.

HOW TO MAKE A PAPER DRINKING CUP

ONE of the most useful articles on a picnic is a cup for drinking water, as some one is sure to be thirsty, and it is not always convenient to carry a glass with the lunch. A paper cup is very simple to make, and can be made in a minute or two from a single sheet of paper. Then, too, this kind of a cup is sanitary, for each person may have his individual cup. It is also useful

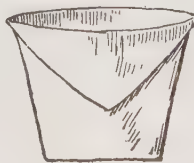
in such an emergency you will know just what to do, for you will quickly fold a square of paper into a handy water-tight cup.

This is the way to make it. Take a piece of writing-paper, or any stiff paper about eight inches square. Take the upper left-hand corner and fold it over to C, the lower right-hand corner, creasing on the centre line AB, to form a triangle. Find the middle



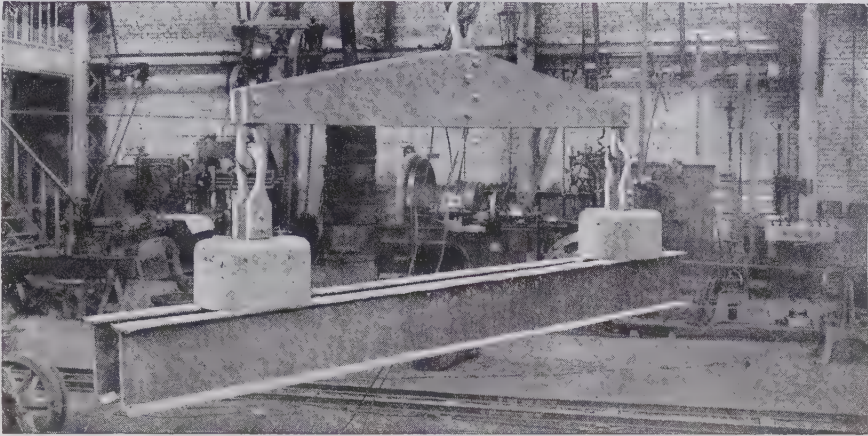
as an impromptu medicine cup, when a glass or teaspoon is not handy. And the best part of it all is that it does not have to be washed, for it is so easy to make a fresh one, and the cost is next to nothing.

If you practise making the little cup described here, then when you go on a picnic, or on a boat or train trip, or even on a tramp through the country, you will know how to make your own drinking cup. Sometimes when automobiling or driving, you come across a little stream, and wish you had a cup for a cooling drink. Next time



points of the sides AC and BC. Take the lower corner B, and fold it over to the point half-way between A and C, making the new edge, BD, parallel to the long edge of the triangle. Take the corresponding corner A and fold it in the same way to the point half-way between B and C. Then take one of the corners at C, and turn it into the little pocket made by the fold B, or simply fold it outside. Finally, take the other corner at C and fold it outside the cup. It is now complete.

THE NEXT THINGS TO MAKE AND DO ARE ON PAGE 5641.



A PAIR OF MAGNETS LIFTING STEEL GIRDERS THAT WEIGH SEVERAL TONS

THE WONDERFUL UNSEEN WORKER

MOST of us know something about magnets. The earth itself is one vast magnet. The magnetic force of the earth, passing, age upon age, through certain ores, has magnetized these and made them into natural magnets, which we call the loadstone. All this we know already, and we know also that we ourselves can transfer this magnetic power of the loadstone to iron and steel, and make magnets of these. Steel which has been so treated remains magnetized, so we call it a permanent magnet.

A magnet of this type is one of our good servants which do much work for nothing. It is a permanent magnet, or magnetized needle, which makes the mariner's compass, to guide our brave sailors about the world of waters.

People of old time knew something of the wonders of the loadstone, the natural magnet, and attributed to it powers more magical than those which writers of stories bestow upon the fairies. Savages generally worship anything which they fear or cannot understand; people in Europe used to do almost as foolish things,

CONTINUED FROM 5427

and especially was this so in regard to the loadstone. The amusing thing is that

we, in these happier days, have magnets which, while they cannot perform the marvelous feats supposed to be performed of old by the loadstone, do really much more wonderful things than worshippers of the loadstone ever dreamed of. Of course, it is the magnet known as the electro-magnet of which we are now speaking.

The secret of its immense usefulness is that one moment it is a magnet of enormous strength, and the next it is simply a piece of unmagnetized iron. The permanent magnet is too faithful; like the lichen on a rock, it must go on clinging to that which it holds. So that, although it will pick up a needle or a cannon-ball, it will not put either down, but will go on holding it until its magnetism grows faint, and the weight of its burden becomes at last too heavy. It is like a badly-trained dog which will run and pick up a thing for us, but will not give it to us when we desire to have the article.

The electro-magnet is a giant which a little child can control and direct. We all know how it is made.

Big or little, and no matter what the pattern, the electro-magnet is always the same in principle. It is just a piece of soft iron wrapped about with wire. The wire is insulated, of course—that is to say, it is all carefully wrapped in silk or gutta-percha, or some other substance, so that when the electric current is turned on the wire shall not let that current escape. There it is, then, a core of soft iron—soft iron because this does not retain its magnetism—wrapped about with wire. It is still and lifeless until we want it. Suppose now that we do want it. Let us ask a little girl to set the mysterious helper to work.

She touches a switch, and turns on a current of electricity, which comes to the magnet by way of wires. These wires are connected with a dynamo which is generating electricity, it may be miles away. The moment the little girl turns on the switch the current flies through the wire in which the soft iron is wrapped, and, hey, presto! our soft iron has become a magnet of tremendous power. The electric current magnetizes the iron, and there is no natural magnet on earth so strong as that which our little girl places at our disposal.

What shall we do with it, now that we have got it? Here are tons and tons of pig-iron lying in a yard, waiting to be lifted into the railway trains which are to carry it from one end of the land to the other. It would take men days to do the work. We can do it as easily as we play a game. The magnet is fixed to a chain which is attached to a traveling crane. The magnet is lowered until it comes near the iron. Instantly these massive "pigs" of metal leap up as if they had awakened from sleep, and cling to the magnet as to their dearest friend.

The little girl gives a signal, and the engine-man makes the crane travel along its little overhead railway, carrying the magnet with its load of iron "pigs" with it. The burden is held over a car. The little girl touches the electric switch again, shuts off the current, and makes the magnet instantly cease to be a magnet, with the result that the pig-iron is no longer held up, but drops into its place in the car. Then the magnet travels back, is remagnetized, and brings back more pigs. In a very short time all the pig-iron is loaded into trucks, and the train is ready to start with its freight.

The lifting power is fixed by the size and nature of the magnet used and the strength of the electric current supplied.

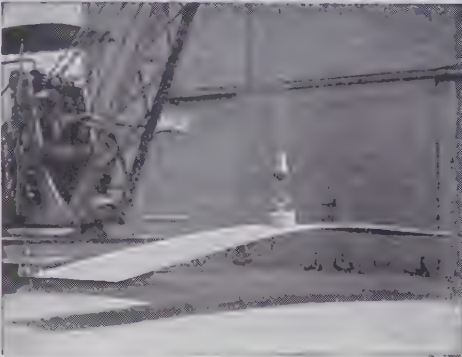
The child whom we imagine as controlling the electro-magnet is performing before our eyes a miracle far more wonderful than any animated by our forefathers, who bowed down before the loadstone. She has before her common iron and common wire, dead, seemingly useless material. She touches the switch, and puts into that wire and iron a something which seems to render the iron alive, as with a mighty power.

Our magnet can lift and carry and place things in position for us, releasing them immediately we wish. But it can also act as a ready and rapid destroyer. When machinery has served its purpose, it has to be broken up, "scrapped," as we say, so that the metal may go to the furnace and be converted into something new and beautiful. But it is very hard work to break it up. Our young friend with her electro-magnet comes again to our aid. She touches the switch, turns on the current, and makes the magnet pick up a mass of metal. By the help of the crane she raises it to a height, then switches off the current, and lets the metal fall. Crash!—the machinery is broken into fragments ready for the furnace.

During the progress of this work an unfortunate man gets a sharp fragment of metal driven into his flesh. Our young friend comforts him, and leads him away to another magnet. She places the point of this at the entrance to the wound, and turns on a gentle current of electricity. The iron becomes magnetized, and in an instant we find that the piece of metal has been drawn out of the wound by the magnet.

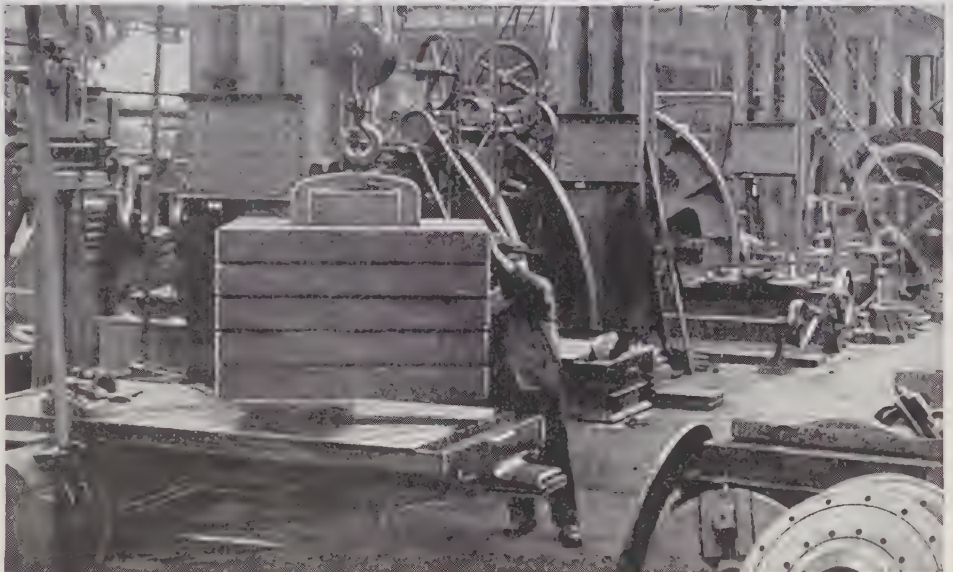
In the Great War, surgeons made similar use of magnets for drawing out fragments of shrapnel, and splinters of steel from wounds. The wearing of metal shields and helmets, although it often saved life, increased the number of casualties of this kind. The electro-magnet works for us in many other ways. Every journey performed by electric train or trolley or motor, every message sent by telegraph or telephone, every electric bell that is rung, is worked by means of an electro-magnet, one of the most wonderful helpers that man has summoned to the service of the world.

MAGNETS THAT DO THE WORK OF FIFTY MEN

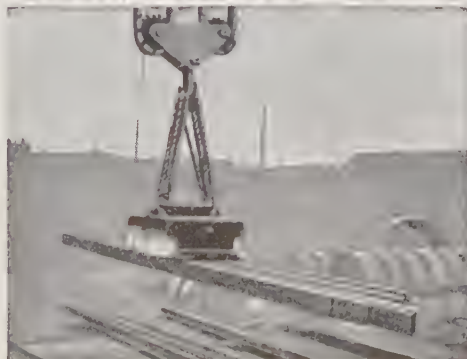


More and more of the lifting work in modern engineering works is done by powerful electro-magnets. They are particularly useful for lifting long, thin plates of steel, which are difficult to handle by means of ordinary chains and pulleys owing to their flexibility.

The most massive parts of machinery, many of which are inconvenient to move because of their awkward shape, are easily raised by an electro-magnet and conveyed by a traveling crane to any place. The magnet effects a great saving in time and labor.



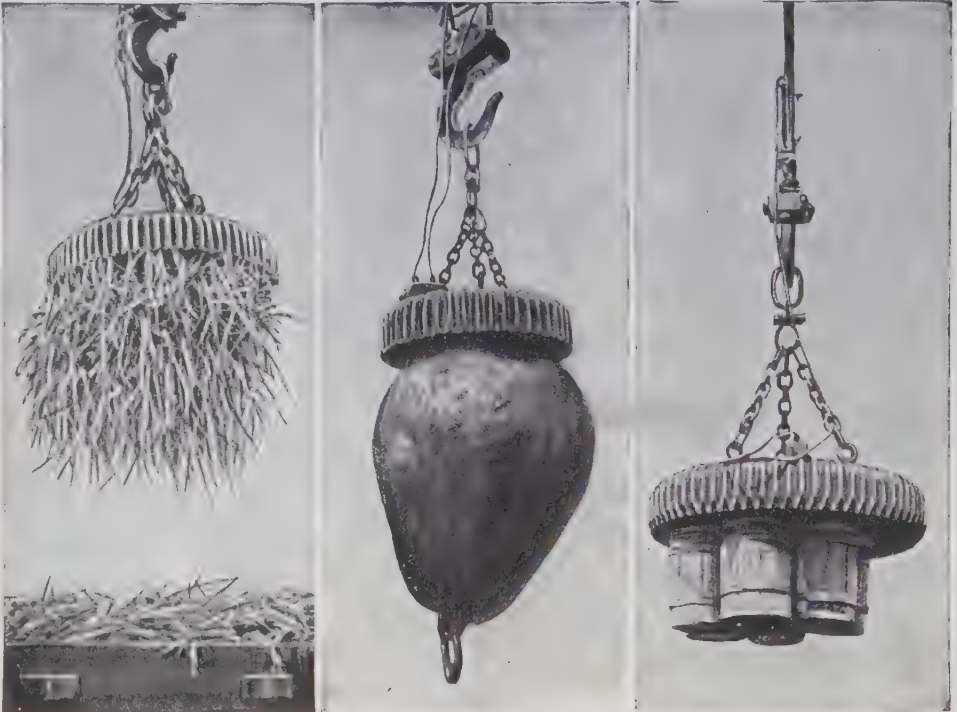
The power of the magnet can be so regulated by the strength of the electric current that a number of pieces of iron and steel can be raised at one time, as seen in this picture, and then dropped one by one as required.



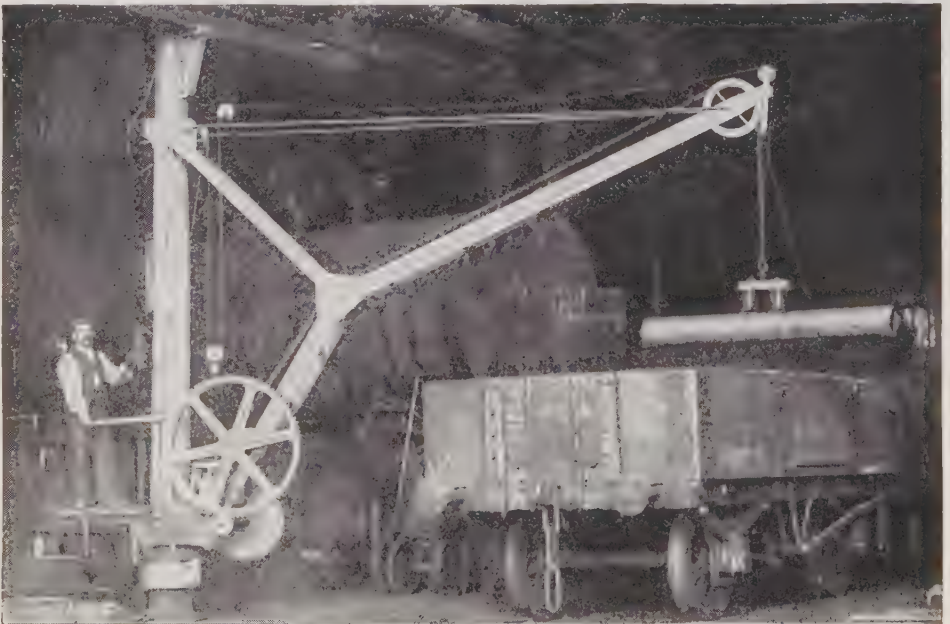
Girders had formerly to be raised separately, and there were many accidents among the men who handled them; now several girders can be lifted at once quite safely. Some magnets do the work of fifty men.

Great steel arches like those shown in the picture, weighing several tons each, were difficult to move by means of slings and hooks; now the electro-magnet handles them quite as easily as it does straight bars.

HOW THE GIANT MAGNETS ARE USED



Here are some of the ways in which the electro-magnets, the most powerful of which will lift more than twenty tons, are used. In the left-hand picture a great mass of scrap steel is being raised, in the right-hand picture six barrels of nails are held by the magnet. In the centre the magnet is holding a huge mass of steel weighing over 22 tons, called a "skull-cracker," which is used to smash up old iron, as shown on page 5531.



In this picture some very heavy iron cylinders are being loaded into railway trucks by means of an electro-magnet attached to a crane. As soon as the cylinder is hanging above the truck, the current is shut off, the magnetism ceases, and consequently the iron falls. These magnets are very cheap considering the work they do. They are particularly useful in handling newly-made pig-iron that is red hot.

ONE OF THE BIGGEST LIFTING MAGNETS



This picture shows how old machinery is smashed up with the help of one of the biggest lifting magnets in the world. A skull-cracker, weighing 22 tons, is raised and then allowed to fall with a crash on the old iron.



A comparatively small magnet will lift a ton of steel with three men standing upon it, as seen on the left. On the right, ingots of iron are being moved by means of an electro-magnet attached to a traveling crane.



Here is a magnet lifting several tons of pig-iron as though it was a feather. Such a magnet will move a thousand tons of iron in a day. This iron has cooled after being run into channels, as you read in the "Story of Iron and Steel." Magnets are used in shipbuilding for holding steel plates in position till riveted.

THE NEXT STORY OF FAMILIAR THINGS BEGINS ON PAGE 5608.

FABLES OF ÆSOP THE SLAVE IN FRENCH

The English versions of these fables are on page 3370.

LE VILLAGEOIS ET LA VIPÈRE

Par une froide journée d'hiver, un villageois trouva sous une haie une vipère qui était presque morte de froid. L'homme eut pitié de la pauvre bête, l'emporta chez lui et la déposa sur un tapis devant un bon feu. Au bout de quelque temps, la chaleur ranima la vipère qui se mit aussitôt à siffler et à menacer de mordre les enfants.

Le villageois, entendant ses enfants crier, entra en courant, saisit un bâton et tua la vipère en disant : "Est-ce ainsi que tu récompenses ceux qui essayent de te sauver la vie ?"

Ceux qui n'ont pas de reconnaissance pour les bienfaits, n'en reçoivent pas d'autres.

LE RENARD ET LA CHÈVRE

Un renard, un jour, tomba dans un puits et ne put en sortir. Quelques heures après, une chèvre passa par là, et, ayant soif, elle demanda au renard si l'eau était bonne.

"Elle est si bonne, si douce," dit le renard, "que j'en ai bu tant que je crains d'être malade."

Là-dessus, la chèvre, sans plus d'hésitation, sauta dans le puits afin de boire. Le renard aussitôt bondit sur son dos, et réussit ainsi à sortir du puits, laissant à la pauvre chèvre le soin de s'échapper comme elle pourrait.

Examinez avec soin les conseils de ceux que vous ne connaissez pas.

L'ENFANT QUI CRIAIT "AU LOUP"

Il y avait une fois un petit berger qui gardait un troupeau de moutons dans les champs. Par plaisanterie, il criait souvent : "Au loup ! Au loup !"



A ce cri, les hommes qui travaillaient dans les champs voisins, couraient au secours, mais après avoir été trompés

deux ou trois fois de cette manière, ils résolurent de ne plus faire attention aux cris de l'enfant.

Quelque temps après, un loup vint réellement et le petit berger appela pour de bon. Mais personne ne s'inquiéta de ses cris, et ainsi, ses moutons furent tués par le loup.

Si nous mentons, personne ne nous croira, même quand nous dirons la vérité.

JUPITER ET L'ÂNE

Un âne, appartenant à un jardinier, étant las de porter chaque jour une charge de choux au marché, pria le dieu Jupiter de lui donner un nouveau maître. Jupiter consentit à lui donner un tuilier



qui l'envoya chaque jour au marché avec une charge de tuiles.

Le pauvre baudet, trouvant sa tâche plus pénible que jamais, demanda au dieu de changer encore une fois son maître. Cette fois, Jupiter lui donna un tanneur, qui le traita plus durement et cruellement encore que ses deux autres maîtres.

Quand ce fût trop tard, l'âne souhaita d'être resté avec son premier maître.

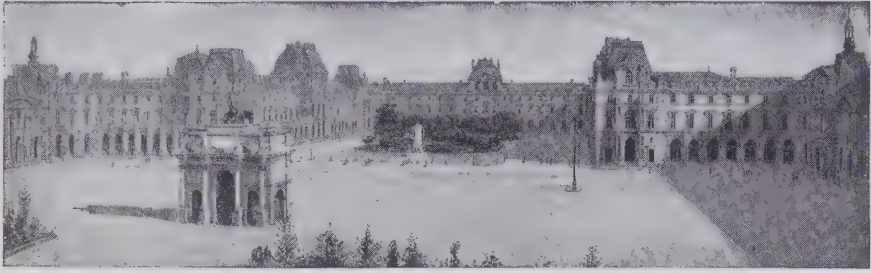
Soyez satisfait de votre sort.

LE RENARD ET LE LION

La première fois qu'un renard vit un lion, et entendit son terrible rugissement, il fut si effrayé qu'il se mit à trembler, étendu à terre, et qu'il mourût presque de terreur.

La fois suivante, il fut moins effrayé du roi des animaux, et osa le regarder timidement. La troisième fois que les deux animaux se rencontrèrent, le renard avait perdu toute crainte, et il s'approcha froidement du lion et se mit à lui causer comme s'il eût été un vieil ami.

La familiarité engendre le mépris.



THE LOUVRE, ONCE A FAMOUS PALACE, NOW THE LARGEST MUSEUM IN THE WORLD

A FIRST HOLIDAY IN PARIS THE BEAUTIFUL SIGHTS OF A BEAUTIFUL CITY

IT is near the end of the school year. We find it hard to keep our attention on our books when every sound from the open air calls us out of doors. But our flagging interest in lessons is roused by the announcement that with a few of our friends, we are to go to Europe with Father and Mother. Our French teacher, who is going home for her vacation, has promised to show us the wonders of the beautiful and interesting city, and we can think and talk of nothing else.

The prospect of really needing their French has spurred the girls on to learn quickly and well, and to follow with delight the lessons of Mademoiselle from the large map of Paris on the class-room wall. They all try to outdo each other in the neatness of their outline maps, traced on tracing-paper, of the Seine and the principal streets, and in making the notes in their books to remind them of the makers of Paris, and the famous people who have lived in it.

At last the longed-for day comes. Our arrival in New York, our stay in one of the large hotels, and our drive down the great Avenue and across the narrower, crowded street to the dock, is in itself a pleasure. Father wants to do some business in London on our way, and so we sail on a steamship that will take us to England. The days on board pass quickly. We are never tired of finding out the wonders of the great ship,

CONTINUED FROM 5465



and watching the constantly changing sea. All too soon we reach Liverpool, and then comes the quick run down to London, and after a few days there, we go to Dover to set out for Paris.

We stay on deck during the short crossing, and watch with interest the beauties of the choppy sea, and the passing shipping, and are astonished to find that in mid-channel we can see the white cliffs of Calais before we have quite lost sight of the cliffs of Dover.

A little over an hour, and the eighteen miles are covered, and we step ashore, "foreigners" for perhaps the first time in our lives, feeling bewildered at demands for our tickets, and rather agitated over getting our hand-baggage through the Customs.

As our train passes along the sands outside the walls of Calais, we get a good view of the old-fashioned town, so long connected with English history and trade. It was here that Queen Philippa begged with tears for the lives of the brave citizens from the angry Edward III., and we remember, too, how deeply unhappy, lonely Queen Mary took the loss of the town to heart.

During the journey of three and a half hours between Calais and Paris, all is interesting and delightful. Boulogne, where Napoleon's boats waited in vain to conquer England, is soon passed, and we enjoy the look of the people and their luggage, the

unfamiliar advertizements, the grey houses and stiff gardens, the rows of poplar-trees bordering the straight roads; even the restaurant car has unfamiliar charms.

Still, we are glad enough to get our first sight of Paris, and to come to a standstill in the Gare du nord, or North Station. An omnibus is waiting for us, but it is half an hour before our baggage is claimed and passed by the Customs, and the porter can carry it off.

Our hotel is not one of the large, expensive ones, where many English and Americans go, but a quiet old French house on the left bank of the Seine, not far from the old heart of the city. No one speaks English, so we shall have to make an effort to throw off our shyness, and say our greetings and express our wants and thanks in French.

How delightful are our simply furnished bedrooms, all opening into each other, with pretty white beds, and tables to write at, and the windows looking across the river to the buildings of the Louvre! Our few possessions are soon arranged, and our first French meal enjoyed, and then we sally forth for a walk—in Paris.

We do not need to go far; the quays close by, and the bridges, are full of busy life. There are the workmen in blue blouses and caps, going home from work; the women with their blue aprons and neatly dressed black hair, without any hats; the children with long plaits, all talking and laughing, and full of animation. How clean is the river, how fresh and keen the air; how fairylike it seems when the lights begin to appear along the quays, outlining the bridges, and on the little steamers and barges! We eagerly look for the towers of Notre Dame, the spire of the lovely Sainte Chapelle in the Law Courts, the Eiffel Tower, with its great light on the top, the highest monument in the world, and then home to bed—for kind, polite Madame makes her house feel like home to us—so as to be ready to start early in the morning.

Mademoiselle tells us, over our de-

licious breakfast of rolls and coffee—some of us prefer chocolate—that we are to begin with a birdseye view of her dear native city, so we joyfully make our way along the quays on the south side of the river till we come to the short bridges that lead on to the Ile de la Cité, the Isle of the City, and soon find ourselves walking round the great cathedral of Paris, dedicated to Notre Dame, our Lady, admiring the three-storied west front with its beautiful rose window, and the wonderful flying supports, or buttresses, round the choir.

But it is one of the towers we wish to ascend—resting on the way, for it is a good climb—to look at the fearsome monsters carved in stone that gaze out over Paris from the gallery round the

towers. It is nearly 400 steps to the platform at the top, but once there we stay a long time, and we look and look, and do not want to talk. The river, like a silver thread, we see bordered by quays and crossed by many bridges. We see, too, many wide, straight streets and open spaces, with spires and towers rising from them, and in the distance are swelling hills.

At last, when we have looked long enough, Mademoiselle leads us back to the beginnings of this vast and handsome city, with its three millions of inhabitants. She bids us look down



SAINTE CHAPELLE

on the little boat-shaped island—formed of two or three islands, artificially joined as the years went on—on which Notre Dame stands. This is the true heart of the city. As we look, we are led to think of the settlement of fishers and hunters that was found here 2,000 years ago, and was described by Julius Cæsar. He called it Lutetia. The modern name, Paris, comes from the early tribes—the Parisii—who lived in Lutetia and the neighborhood. By degrees came others sweeping over the country. The fierce, lawless Merovingians led their picturesque life here; many Franks of different families raced hither and thither, their long hair streaming in the wind. In front of the cathedral we noticed the great bronze statue of the hero Charlemagne; he stands out in the years about A.D. 800.

And then Mademoiselle leads us to think, as we look down on the Seine, with its busy steamers darting to and fro, of the days when the bold Normans swarmed up the river from Rouen, burning what they could not carry away. We then pass on to the foundation of the present cathedral in the middle of the twelfth century, and its completion a hundred years later in the reign of the

saintly Louis. He built the Sainte Chapelle in the Palais de Justice, which is also on the Isle of the City, to hold the precious relics he brought home with him from the Crusade. He has been called the Father of Paris; and the small island covered with dingy white houses, lying

behind the Isle of the City, is named after him. Louis lived in other palaces besides that on the island; and there was founded in his reign, on the south side of the river, a sort of hostel for students, which grew in the course of centuries to be a great place for education. It is known as the Sorbonne, and the quarter in which it stands is called the Latin Quarter.

Coming down from the tower, we pass inside the cathedral, and sit awhile to admire the light streaming down from the upper windows over the double aisles with their cross views. What stories those pillars could tell if they had a voice! The funeral service of St. Louis was held here, also the coronation of the English king Henry

VI., when ten years old, as King of France, for in the fifteenth century the English held Paris for sixteen years. Grievous was the havoc wrought at different times from the so-called "restorations" in the seventeenth and eighteenth centuries; and at the awful time of the Revolution the greater part of the old statues and choir chapels were destroyed.

The splendid coronation of Napoleon I. and Josephine took place here, also the grand marriage of Napoleon III. In the frantic times of the Commune, in 1871, Notre Dame had a narrow escape. Chairs were piled up and set alight, and the building was only saved from destruction by the want of air and the dampness of the walls.

In the afternoon we take the steamer to the Jardin des Plantes, where there are animals, too. We spend a happy time watching the children and seeing their delight at the peacocks spreading their grand tails and shining blue among the bushes.

The next morning, early, we make our way to the Louvre, across the Pont des Arts—the Bridge of the Arts.

We know the shape of the vast pile of buildings from our map, and from our view of it from the tower of Notre Dame; and before going inside we spend some time walking about the courts—the inner court, where we can see the corner in which the old castle of the Louvre once stood, and the larger court, where stands the statue of Lafayette—given by the children of America—and the monument

of Gambetta, the French statesman. As we pass round, we think of the builders of the huge palace, as it grew through the centuries. Such were Francis I., he who had such gay times with King Henry VIII. at the Field of the Cloth of Gold; Catherine of Medicis, the mother of three

kings of France, the eldest of whom married the famous Mary Queen of Scots; Henry of Navarre, the hero we know so well in Macaulay's poem, "The Battle of Ivry." Louis XIII. and Louis XIV. did their share, and so did, long after, Napoleon I. and III. The Louvre is now the largest museum and picture-gallery in the world. We may think of it as a



THE CATHEDRAL OF NOTRE DAME



THE FAMOUS STONE FIGURES ON NOTRE DAME

picture-gallery, a museum of decorative art, and a historical museum all in one building. It would take us hours merely to walk straight through, so all we can possibly hope to do during our short visit to Paris is to look in for an hour whenever we can, and study just a few of the wonders displayed in the magnificent galleries and rooms. To begin with, we are all impatient to see the models of the Aysrian mounds, and to compare the treasures from them and from Egypt with those we know so well in the Metropolitan. The time goes all too quickly while we are absorbed in the beauty and

the splendid avenue of the Champs Elysées beyond. We loiter long in the gardens of the Tuileries, while Mademoiselle tells us of the handsome Tuileries palace which grew up as a sort of sister palace to the Louvre, to which it was joined by the wings. The wings we see still standing after restorations, but the splendid main part, the body, so to speak, is all gone, burned down at the time of the Franco-Prussian War in 1870 by the men of Paris, who were maddened by the awful losses of the war. In the evening we gather in Mademoiselle's room, with our maps and plans, and talk over the



A BUSY STREET SCENE IN PARIS NEAR THE CENTRAL MARKET

completeness of these collections, but lunch and a rest in a restaurant close by become a necessity.

After that, we are ready to return to the Place du Carrousel, the wide, open space beyond Gambetta's statue, and to examine the triumphal arch in memory of Napoleon's victories in Central Europe. The chariot group on the top replaces the famous group from Venice which Napoleon carried off, and which was restored to its owners later on. We enjoy the fine view looking west from this arch, over the gardens of the Tuileries and the wide, open Place de la Concorde, with

tragic times of the vanished Tuileries. In fancy we hear the yells of the mob as they dance and shout round the carriages of the king and queen, Louis XVI. and Marie Antoinette, as they escort them from their palace at Versailles to the Tuileries. "We shall have bread enough now we have the baker and the baker's wife and boy," cry the crowd.

Next morning we start early so that we can spend a long day at Versailles, about twelve miles out of Paris. We take the electric cars, so as to see all we can of Paris and Sèvres and the fortifications, and are much amused to see the men

poking their long rods into the carts to find out if anything that ought to pay duty is being smuggled. We learn to our amazement that all merchandise brought into Paris from the surrounding country must pay a tax or duty, called the octroi, at the city gates. Arrived at Versailles, we first look at the wonder of the gardens. It seems almost impossible that the great expanse of woods and flower gardens, with lawns and ponds, a canal a mile long, and fountains that are the wonder of the world, was once a mere sandy waste.

But so it was when Louis XIV. turned his mind to making the desert into a

window like the eye of an ox, where Louis XV. kept his courtiers waiting about to see him put on his fine clothes. The rooms of Louis XVI. and his queen have a sad interest; indeed, all is sad at Versailles, the scene of the luxury and thoughtless, selfish extravagance when France was starving, that did so much toward bringing on the Revolution.

The pictures on the walls give us many vivid impressions of the history of France—portraits, pictures of great events, such as the Coronation of Napoleon and Josephine, with the Pope looking on; indeed, there are endless pictures of



THE WONDERFUL GALLERY OF MIRRORS IN THE GREAT PALACE OF VERSAILLES

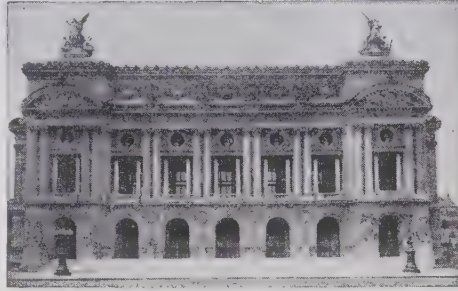
blooming garden and the little hunting castle of Louis XIII. into a magnificent palace large enough for all the Court to live in. We wander about the paths and terraces, thinking of the labor it cost to bring the water from a distance, and to lay out these huge pleasure-grounds, and plant all the avenues and shrubberies, and adorn them with such an enormous number of sculptures. As we pass through room after room in the vast palace, we are not surprised to hear that it was built to hold 10,000 people. We see the rooms of Louis XIV., and the Salle de l'Œil de Bœuf, the room with a round

Napoleon in all the varied successes of his life. The acres of battle pictures are too dreadful to look at very long. Among them we find a picture of the surrender of Cornwallis, at Yorktown, which the artist has depicted as having been made to the French General Rochambeau.

We spend some time in the long Gallery of Mirrors, realizing the extraordinary fact that the German army encamped for some months at Versailles, and that the King of Prussia was proclaimed German Emperor in this very room in 1871.

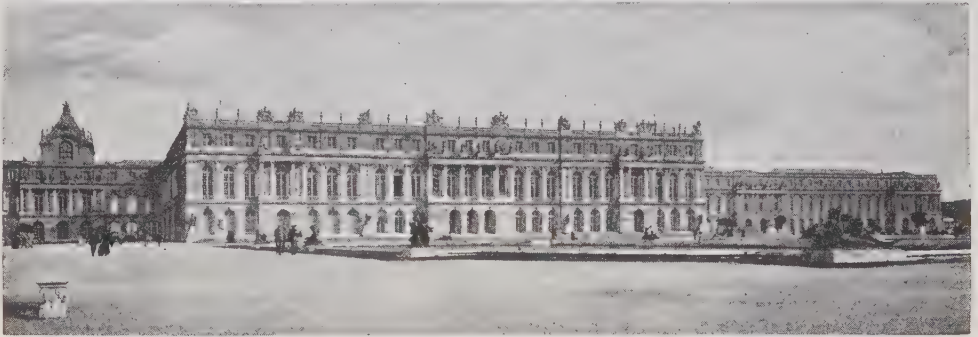
Next day is Sunday. After service at

the American church we stroll along the quays by the Louvre, and so to the Place de la Concorde, perhaps the largest and most beautiful square to be found in the world. We look at the great stone figures which represent the chief towns of France. Then we come to the marble fountains, and between them the Egyptian obelisk from Luxor, like Cleopatra's Needle in Central Park, New York. It was almost on this spot that the guillotine was set up during the Revolution; and more than 3,000 persons were put to death here in the space of a year and a half.



THE OPERA HOUSE

we start in a taxi-cab, along the wonderful Champs Elysées, admiring the fine avenues, and seeing the children in the gardens bowling hoops, playing at battle-dore and shuttlecock, and thoroughly enjoying themselves under the care of their nurses in big cloaks and white frilled caps ornamented with handsome, wide plaid ribbons which hang almost down to the ground. Too soon we arrive at the Arc de Triomphe de l'Etoile, the largest triumphal arch in the world, which we have already seen from a distance on many occasions. The great sculptures upon it



THE OUTSIDE OF THE MAGNIFICENT PALACE OF VERSAILLES, AS SEEN FROM THE GARDENS

In the afternoon we take a long walk through the streets, and feel intensely interested in the crowds, and we look at the Palais Royal, behind the Louvre, once so gay and bright, now so dingy, and we think of the young leader of the Revolution who, standing on a table in the courtyard, poured out fiery words to his excited audience, until they snatched green leaves from the trees—green, the color of hope—as their badge, and resistlessly forced their way to the destruction of the hated Bastille. Next day, as most of the museums are shut, to have their floors waxed, Mademoiselle has arranged a most delightful out-of-doors day. Off



THE CLUNY MUSEUM

chiefly record the successes of Napoleon and his generals. We mount by the elevator to the platform, whence we can see all round this handsome part of Paris. Many wide roads lead out like rays from the arch. Descending again, we take the one that leads direct to the Bois de Boulogne. This park is a fragment of the forest that once filled the loop made by the Seine in which it stands. We find much to interest us—the upper lake and the cascade, the lower lake and the woods and walks, and the numbers of carriages. Mademoiselle tells us these have to go at a walking pace on the days of the great races at the Long-champs course, close by, when all Paris

turns out in the gayest and most wonderful clothes. We seek a sheltered corner for our picnic lunch, and then find that Mademoiselle has a pleasant surprise for us. A friend of hers has invited us to tea with her children in the Jardin d'Acclimatation. Mademoiselle has already told us about this delightful garden, which is half zoological garden and half botanical garden. Now, we have just been longing to speak to some French children—they look so charming—and here is our chance. They are younger than we are, but we are glad, for it is we who are shy, not they, as they come forward to speak the little English that they know and help us with our French. We soon make friends, and the two little girls join them in riding on the elephants and camels, and driving in carts drawn by ostriches. And then they take us to the little ponies, standing in their nice stable, and they smile as we try to pronounce their names, and we watch the children as they go off to their riding lessons. We find the rabbit-house delightful also, and the absurd little dogs—all these are for sale. Presently we have coffee and cakes, and then a run through the gardens, finding most of the old zoo favorites under their French names. The nothouses recall the Bronx. Next morning we leave a large bunch of roses for the children's mother, with a message of thanks, and then we make our way to the Greek sculpture at the Louvre. We look only at a few of the marvels, for Mademoiselle likes us to look earnestly at one for a time, and then shut our eyes and recall it in our mind, and then look again, thus learning it by heart. This we do with the beautiful Venus. We feel

her quietly drawing us on all the way along the corridor at the end of which she stands alone. Some of us have seen casts of her before, but, oh, the difference as we look on the marble itself! We feel it delightful to see such perfect, peaceful beauty.

Those of us who have seen the Parthenon Gallery in the British Museum in London are interested in the fragments of the frieze, showing the gentle Athenian maidens, in the Louvre, and we each find something that we particularly like to print on our memories—the Winged Victory of Samothrace, the Boy with a Goose, Alexander the Great, Discobolus

Resting, Old Father Tiber, and other treasures. The afternoon turns wet, and, to our joy, Mademoiselle's friend asks us to come to see her children again. So we have the pleasure of seeing a French family at home, and greatly admire the shiny neatness and all the pretty arrangements. We teach our little friends how to play some of our games, and then they show us some of their French games. We are delighted with their picture books and song books, and the dolls and toys that they show us so prettily.

Next day is still

wet, so we cross to the Louvre and spend a couple of hours studying some of the wonderful pictures. Mademoiselle takes us first to Mona Lisa, La Joconde. How she smiles; how her eyes follow us; how alive she is; and how strange the story of the mysterious theft and fortunate recovery of this picture. Leonardo da Vinci worked four years at this picture, and then it was not finished. We stay as long as we like before the great pictures that attract us, but Mademoiselle thinks six, or eight at most, are as many as we can really remember at all well.



NAPOLEON'S TOMB IN THE HEART OF PARIS
Known as the Hotel des Invalides

In the afternoon we walk or take omnibuses along the boulevards, the wide, tree-bordered roads built on the lines of the old fortifications, and are greatly amused with the life and bustle, especially with the boys shouting out the names of their papers, the chair-mender blowing a horn, the dog's barber with his box of scissors. We buy a few presents to take home, and also look in at the great Magasins du Louvre, where everything we can think of can be bought if we only know the right way to set about it. Our treat next day is the Cluny Museum, built over the site of an old Roman

palace, of which the only part left is some remains of its sumptuous baths. The present Hotel Cluny—it was the custom to call grandhouses hotels in former days—was built over 400 years ago, and for long it was the home of royal and noble folk. Among them were James V. of Scotland, and Mary, the sister of King Henry VIII. and wife of Louis XII. Now, a great collection of thousands of interesting and beautiful things are safely stored in it, chiefly furniture and all kinds of rare works of art. It is a fine place in which to dream of bygone days, for here is the actual setting in which to put our mind-pictures of the great lords and ladies whose portraits we have seen so often in Paris. We can fancy them gliding out of the door into the garden, sitting in the stiff chairs by the splendid carved mantelpiece, playing delicately on the musical instruments, receiving as presents—perhaps rather bored—the beautiful works in silver and gold and glass, handling those magnificent keys; and there are the clocks that ticked away their time so surely and so steadily!

The rest of the day we spend on

steamers up and down the Seine, gathering some ideas of the great water trade of the city, and watching at the quays the unloading of the wine, the grain, and other things needed by the inhabitants.

We have many times noticed the dome of the Invalides, and when we come next day to spend our morning there we find that the dome itself is but a part of an enormous pile raised by Louis XIV. as a refuge for his old soldiers, the invalids. It was planned to house 7,000, but, alas! it is too small to hold all who need its shelter now. In some of the buildings are displayed all sorts of arms and armor

and relics of the terrible wars that have drained France of her strong fathers and sons.

The Napoleon relics make the Man of Destiny very real to us. His grey coat, his well-known hats, his maps and telescopes, the toys of his adored little son, the pathetic relics of his lonely exile and death at St. Helena are all here. His remains were brought to the Invalides nineteen years after his death, to rest, as his will directs, by the Seine among the French people whom he loved so well. We pass to his tomb,

immediately under the dome. Round the crypt are twelve imposing figures, and sixty flags captured in battle.

And now Mademoiselle says that we have had enough sight-seeing, though there are hundreds more sights to see, and during the few days that remain we spend our time on the steamers, on the tops of omnibuses, in the various gardens. We choose the finest of the days to say good-bye to Paris from the top of the Eiffel Tower. We have felt ever since we came to Paris that the tower was stiff and ugly, and dwarfed the other heights



THE INTERIOR OF NAPOLEON'S TOMB
Napoleon lies in the sarcophagus below

PARIS, THE BEAUTIFUL CITY ON THE SEINE



This view of the Seine, as it flows through Paris, shows many of the 32 fine bridges that form one of the glories of the French capital. The oldest of these bridges, which was begun in 1578, curiously enough is called the Pont Neuf, or New Bridge. The latest bridge, which is the most beautiful of all, was finished in 1900.



The most conspicuous landmark in Paris is the famous Eiffel Tower, that stands in the Champ-de-Mars. The tower, which dominates the city, is built of iron, and is 985 feet high. It cost \$1,000,000 to build. The first telephone message from America to Europe was despatched to the wireless station on the Eiffel Tower.

The photographs on these pages are by Messrs. Frith, Lévy, Gémoux, Neurdin, and others.



LITTLE FRENCH CHILDREN ENJOYING THEMSELVES IN THE PARIS ZOO

of the city; but now, standing on the third platform, over 900 feet from the ground—which we have reached by elevators—near the giant's head, we feel how wonderful it is to look over all the towers and spires. Nay, we can see far away over most of the hills that surround the great city, and far away to the great wide France beyond. "Plenty to see next time," laughs Mademoiselle, as we

rather gravely roll up our maps, reflecting that we have not seen St. Denis, nor the Pantheon, nor the Madeleine, nor the Luxembourg, nor the Trocadéro, nor much more that lies in the wide space below us.

And so to earth again and to pack, and then set out on our way to Rome, saying very gratefully as we part, "Merci, merci beaucoup, chère Mademoiselle."

THE NEXT STORY OF COUNTRIES IS ON PAGE 555I.



THE HALL OF THE EMPERORS IN THE LOUVRE MUSEUM



Picture from Underwood.

The Submarine Net in Halifax Harbor.

THE MARITIME PROVINCES

THE Maritime Provinces is the name given in common to the group of three provinces, Nova Scotia, New Brunswick and Prince Edward Island, on the eastern coast of Canada. They are of the utmost importance to the nation. Their people, who are largely of British descent, are a sturdy folk, brave and loyal, and well worthy of their post of honor at the eastern gateway of the Dominion. The history of the three provinces is closely interwoven, for this whole region was the Acadia of the French, who were its first settlers.

The struggle for the continent may be said to have begun in Nova Scotia. As early as 1613, an effort was made by the English colonists of Virginia to destroy the French settlement at Port Royal, now called Annapolis, on the fertile landward side of the peninsula, which is almost separated from New Brunswick by the Bay of Fundy.

The British claimed that the peninsula lay within the territory which belonged to them, and in 1621 James I granted it to a Scotchman named Sir William Alexander. Efforts were made from time to time to make good these

CONTINUED FROM 5407



claims, but it was not until the Peace of Utrecht in 1713 that

it was given up by the French. At that time there were four thousand Acadians in the country. Their descendants now number a hundred and fifty thousand, who are found chiefly in certain counties where they form real French communities, which differ in manners, customs and language from the English-speaking people by whom they are surrounded.

The name Nova Scotia was given to the peninsula in the charter from James I to Sir William Alexander. The province, however, consists of the peninsula and the island of Cape Breton. Nova Scotia varies in width from sixty to a hundred miles, while its length is two hundred and sixty-eight miles. The bold, rugged rocks of the eastern coast are everywhere eaten, by the waves of the Atlantic, into countless inlets, bays and harbors. Of these the chief is Halifax Harbor, which is easy of access, and is more than large and deep enough to hold all the navies of the world within its sheltering cliffs.

The western coast is broken by St. Mary's Bay, which is open to the south, Annapolis Bay, and the great Basin of Minas, which ends in Cobequid Bay.

Trees come down to the water's edge of part of this western coast, but for a great part of its length it is bounded by low precipices, which keep out the furious tides of the Bay of Fundy. No part of the peninsula is more than thirty miles from the sea. There are many beautiful lakes, and rivers run east and west to the sea.

The island of Cape Breton is divided from Nova Scotia by the narrow Strait of Canso, across which ferry boats ply and carry passengers and trains. The island is a hundred and eight miles long, and the width is very irregular. In the centre is the Bras d'Or, a beautiful land-locked arm of the sea. A canal joins the Bras d'Or to the Little Bras d'Or, and separates the island into two parts.

The mineral wealth of the province of Nova Scotia is great. Manganese, copper, gold, gypsum, iron and coal are all found; the last three in great quantities. The deposits of gypsum are especially large, and in places the white cliffs, gleaming through the foliage of overhanging trees, add much to the picturesqueness of the scene. Coal and iron, however, form the chief sources of mineral wealth in the province. The coal fields at Sydney, Cape Breton, cover an area of five hundred and fifty square miles, and in the whole province the coal deposits are estimated at many billions of tons. In some places the coal is so near the surface, that the sailors who visited Cape Breton in the early days, dug it out with crowbars, and carried it away for their cooking stoves. In other places, the deposits are so deep that one of the mines is said to be the deepest in the world. The iron mines are extensively worked, and huge steel mills at Sydney and New Glasgow give employment to large numbers of people. There is a great deal of limestone in the province, and much feldspar is sent to the New Jersey and Ohio potteries.

THE FERTILE FARM LANDS OF NOVA SCOTIA

The best farm lands of Nova Scotia are found in the inland valleys, and along the sheltered western shores. The valleys are very fertile and the western counties are famous for their fruit. In the spring-time, the traveler in the Annapolis Valley can drive through miles of apple trees in bloom, and the delicate odor from the blossoms, carried on every little breeze

that plays among them, is a joy to remember for years. The diked marshes around the head of the Bay of Fundy bring one back in thought to Holland. In these marshy lands, cattle thrive, and dairy farming is an established industry. The upland regions produce large quantities of hay, potatoes, and other roots, and oats, while wheat flourishes in sheltered places in the valleys. Until recently farming was neglected in Nova Scotia, but a few years ago the government established an Agricultural College at Truro, to which the sons of farmers go to learn the best methods of farming. Dairy farming and co-operative creameries have been established, and some Nova Scotians hope that their province may become the Denmark of the New World.

OTHER INDUSTRIES OF THE PROVINCE

As we have seen, the making of steel is an important industry. For the making of steel, coke is required, and in the production of coke a new industry, tar-making, has sprung up. Millions of gallons of tar are every year extracted from the coal of which the coke is made.

The fisheries of Nova Scotia are among the finest and most profitable in the world, and rank second in the Dominion. Along the Atlantic coast, the waters teem with cod, mackerel, herring, haddock, halibut; in fact, all the fishes of the North Atlantic are found here in abundance. There are cotton mills in the province, and sugar is made at Halifax. The forests are still valuable, and cover a large part of the area of the province.

THE CITIES AND TOWNS OF NOVA SCOTIA

The chief city of the province is Halifax, which was founded in 1749. It is built on a peninsula which juts out into the harbor, and is surrounded by water on all sides, except where a rocky isthmus joins the peninsula to the mainland. Probably no city along the Atlantic coast is better fortified than Halifax. The rocky shores of the harbor make it a natural fortress. The citadel rises above the city, and forts on islands which command the entrance to the harbor, are so built that the fire from their guns interlaces. A magnificent new quay capable of holding the largest ocean liner has lately been built, and railway tracks run down to this quay, so that passengers may leave at once without trouble.

WHAT NOVA SCOTIA CAN SHOW



The village of Annapolis Royal was once considered a strong fortress though now a modern warship would knock it to pieces in ten minutes. Here is the old powder magazine and some of the old cannon which were so dangerous long ago. Annapolis is the oldest European settlement north of Florida.



Halifax, Nova Scotia, is one of the old towns of America, and descendants of some of the original settlers still live there. Some of the residential streets, like Spring Garden Road, here shown, are beautiful. The city is built on a rocky peninsula in the harbor, and its position is one of great strength.

The city has a fine public school system, a university, electric cars, dry docks, and cable communication with Europe. This flourishing city met with a great disaster in the year 1917. On the morning of the 6th of December, a steamer, laden with ammunition, on its way out of Bedford Basin, an inner arm of the harbor, collided with another vessel. The ammunition boat blew up, and the force of the explosion wrecked a large section of the city. Over a thousand people were killed; thousands were left homeless, and numbers lost all that they had.

Sydney, on Cape Breton Island, is the centre of the coal mining industry, and it is here that much of the manufacturing is done. Yarmouth, at the southern end, is a shipping point. Truro is a railway centre, and it is here that the normal school and the Agricultural College are situated. New Glasgow is a mining town, where there are iron and steel works, glass works, and shipbuilding yards. Amherst is also a thriving mining town which has a number of factories.

As we may read in other places in the book, Cape Breton Island was left in possession of the French after Nova Scotia was ceded to the British. Louisburg, on the northern coast, a few miles from the point called Cape Breton, was at this time an important place, and was strongly fortified. It had once been captured by the New England colonists under Sir William Pepperell. The French determined that it should never be taken from them again and in an effort to make it impregnable spent on the fortifications a sum of ten million dollars, so large an amount of money for those days that it is said the king demanded if the walls were built of gold. Nevertheless it was taken a second time by the British, and so that it might never rise again the walls of the fortifications and the houses in the town were razed to the ground. In the years that have gone by since then, the stones have been carried away and some grassy mounds and a few ruined arches are all that remain to prove the existence of the once great fortress. A small town, to which the name of Louisburg has been given, stands on another part of the harbor, and as the harbor is used as a shipping place by some of the coal companies the town may rise into importance, but it is unlikely that it will ever catch up with other cities.

PRINCE EDWARD ISLAND—"THE GARDEN OF THE GULF"

Probably at some time a tunnel will be built under Northumberland Strait, which divides the Island Province of the Dominion from New Brunswick and Nova Scotia. Huge ferry boats now carry passengers and freight trains across the narrowest part of the strait, and boats run from Nova Scotian ports; but a tunnel would make communication at all times much more certain.

Unlike her sister islands, Prince Edward Island has few minerals. The province possesses the best fishing grounds in the St. Lawrence; but although the fisheries are valuable, the people turn more to agriculture. The dense forests that once covered the country have been cut down, and eighty-five per cent. of the area is in farm lands, and the fertility of the soil has given the island its name of the "Garden of the Gulf." The remaining fifteen per cent. consists of swamps, which may be drained, and peat bogs from which at some future time valuable fuel may be obtained. The principal crops are oats and potatoes and other roots. Wheat and barley are grown and a considerable number of farmers are engaged in dairy farming. It is hoped that the fox farming industry, of which the story is told in another place, will add much to the prosperity of the province.

Prince Edward Island is the smallest of the provinces. Its length is only one hundred and forty-five miles, and its area is actually less than that of Cape Breton Island. The province is more thickly populated than any of the others in the Dominion. There are few rich people on the island; but on the other hand there are very few poor people. Charlottetown, the capital city, which is situated on the south side of the island, has a population of 12,000. It was here that the conference which had met to decide whether the three maritime provinces should unite were sitting when delegates from the other provinces arrived to invite them to a conference at Quebec.

NEW BRUNSWICK, THE PROVINCE OF THE LOYALISTS

When Nova Scotia was ceded to the British, the country now called New Brunswick formed part of it, and continued to form part of it until 1784. In that year, the Loyalists who had gone

TWO CHARMING CANADIAN VILLAGES



This is the charming little village of Whycocomagh on Cape Breton Island, or rather we should say in the island, for it is in the interior, on an arm of the Bras d'Or Lake. No more beautiful place for a summer vacation can be found. Sea bathing can be had, for the lake is really a landlocked inlet.



So much of Canada is busy and new that it is delightful sometimes to find a quaint old village like Kingsport on the Basin of Minas. Here everything moves slowly and quietly along, and the atmosphere is restful when one is tired. The Basin is an inlet of the Bay of Fundy, and the tides are high.

up to carve new homes out of its forest-covered lands, demanded a separate government and got it, and the province had its own government until it joined in the confederation of the Dominion.

Except for the narrow isthmus which joins it to Nova Scotia, New Brunswick is bounded on two sides by water, on the south by the Bay of Fundy and on the east by the Gulf of St. Lawrence. Chaleur Bay and the province of Quebec bound it on the north, and Quebec and the state of Maine on the east. Its greatest length from east to west is two hundred miles, and from north to south two hundred and thirty miles, so you see the province is almost square in shape.

Low mountains which run along the southern border protect the coast from the violence of the tides in the Bay of Fundy. They are broken by the gap through which the St. John River flows, and here there is a great harbor which is free from ice throughout the winter months.

In this harbor may be seen the curious sight of ships lying high and dry on the mud at low tide, and gradually rising with the incoming flow, until at high tide they float at anchor in deep water. The scenery of New Brunswick is picturesque in the extreme. It has many rivers and lakes, the northwestern part is mountainous, and the whole province is covered with beautiful forests.

For many years the sea and the forest provided the province with its chief sources of wealth. The fisheries rank next to those of Nova Scotia, and the forests seemed inexhaustible. Much of the pine has been cut down, but the vast forests of spruce, hemlocks, fir, cedar and hardwoods still remain. As you know, spruce is largely used in paper-making, and pulp-making has become an important industry. Spruce forests are replanted like any other crop, the only difference being that it is about thirty years before the new crop of trees are ready for cutting. Therefore, there is little danger that the spruce forests will be destroyed.

At one time New Brunswick produced a great deal of coal called albertite, but the deposit was worked out, and since then little has been done in coal mining, for although the area of coal land is large, the deposits are thin. The province has, however, great mineral resources. Iron,

copper, manganese, antimony, and plum-bago are found. Gold and silver are also found. As in Nova Scotia and Cape Breton, gypsum occurs in unlimited quantities. Little has been done to develop a mining industry. Valuable quarries of granite, grindstone, and limestone provide employment for a large number of people.

It is only of late years that much attention has been paid to agriculture. The population is small in comparison to the size of the province and it was easy to supply the needs of the inhabitants. Nevertheless, New Brunswick may develop into a rich farming country. Everything that will grow in a temperate climate can be cultivated, and there are millions of acres of well drained land waiting for cultivation along the valleys of the rivers. On the marsh lands of the Bay of Fundy there are large tracts of rich farm land, and the whole of the centre of the province is suitable for agriculture. There are many sections of fine farms in the southwest, and a good deal of attention is now being paid to dairy farming.

THE CITIES OF NEW BRUNSWICK

St. John is a beautiful city, built on a rocky peninsula in the harbor formed by the St. John River. It is the eastern terminus of the Canadian Pacific Railway, and as it is the chief winter port of Canada, it is a great shipping centre. It has many factories and has a large export trade, especially in lumber and grain. Moncton, the terminus of the Transatlantic Railway, is an important manufacturing centre. Fredericton, the capital city, has fine public buildings. The provincial university and normal school are here, and the city has a number of flourishing manufactories.

All these cities are built on fine harbors, at the mouths of rivers. Like all the Maritime Provinces, New Brunswick has a number of well-sheltered harbors, capable of holding large fleets.

For many years the prosperity of the provinces was held back by the emigration of their people to the West, and to the United States. Lately this has been checked. Greater interest is being taken in agriculture; the industries are flourishing, and the people look forward with confidence to the future.

THE NEXT STORY OF CANADA IS ON PAGE 5607.

TWO PROSPEROUS CANADIAN CITIES



St. John, New Brunswick, on the St. John River, was largely settled by Loyalists who left America at the time of the Revolution. It is a busy city in a beautiful situation. Though partly destroyed by fire in 1877, the inhabitants were not discouraged. Its industries and manufactures are valuable. This bridge is built over the Reversible Falls. When the tide is full, it rises above the level of the Falls.



Moncton, New Brunswick, has little in common with the sleepy villages we have shown you on other pages. It is a busy, bustling city which is growing in population and wealth. Of late years the Transatlantic Railway has made Moncton its terminus, and the city has become a prosperous manufacturing centre. There are a number of valuable natural gas wells in the neighborhood.

IN BEAUTIFUL EVANGELINE LAND



Cape Blomidon is referred to in Longfellow's poem, *Evangeline*, describing the British ejection of the Acadians in 1755. Here it is standing out in the beautiful Basin of Minas, that wonderful bay where the tides rise so high. Blomidon is at the northern end of the low line of rocky precipices which keep out the tides of the Bay of Fundy. Every year thousands of travelers visit this delightful country.



Few reminders of the time when the French held sway in Acadia now remain. The dwellings and the church where the order for the banishment of the Acadians was read have all gone, but tradition says that this row of hoary old willows was growing here in the time of *Evangeline*. We like to believe it true and to think that perhaps *Evangeline* played beneath their shadow in her childhood.

